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TECHNICAL REPORT

An Assessment of the Army's Tactical Human Optimization, Rapid Rehabilitation and Reconditioning Program

*Terrence K. Kelly • Ralph Masi • Brittian A. Walker • Steven A. Knapp
Kristin J. Leuschner*



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Prepared for the United States Army

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Preface

Special operations forces are among the most capable in the U.S. Department of Defense in terms of both their skills and their physical abilities. To maximize these abilities, help prevent injuries, and increase the length of time these soldiers spend in the force, in 2009, U.S. Special Operations Command provided U.S. Army Special Operations Command (USASOC) with funds to establish the Tactical Human Optimization, Rapid Rehabilitation and Reconditioning (THOR³) program.

As part of a project called “Institutionalizing the Tactical Human Optimization, Rapid Rehabilitation, and Reconditioning (THOR³) Program,” USASOC asked RAND Arroyo Center to determine whether the THOR³ program is effectively utilizing the resources provided and to identify areas for improvement that potentially address doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy needs.

This report should be of interest to U.S. special forces, U.S. Army unit leaders, and the community of trainers and therapists who work with high-level athletes and military personnel.

This research was sponsored by USASOC and conducted within RAND Arroyo Center’s Manpower and Training Program. RAND Arroyo Center, part of the RAND Corporation, is a federally funded research and development center sponsored by the United States Army. Questions and comments regarding this research are welcome and should be directed to the leader of the research team, Terrence K. Kelly, at 412-683-2300, x4905, or Terrence_Kelly@rand.org.

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Summary

Special operations forces (SOF) are among the most capable in the U.S. Department of Defense (DoD) in terms of both their skills and their physical abilities. To maximize these abilities, help prevent injuries, and increase the length of time these soldiers spend in the force, in 2009, U.S. Special Operations Command (USSOCOM) provided U.S. Army Special Operations Command (USASOC) with funds to establish the Tactical Human Optimization, Rapid Rehabilitation and Reconditioning (THOR³) program. The program aims to increase the physical and mental capabilities of SOF soldiers, help them more rapidly recover from injuries sustained in combat or in training, and help them stay healthy and able to contribute longer.

The THOR³ program was implemented in 2010, and there are plans to expand it to all USASOC commands. The program currently has a small headquarters office under the USASOC Deputy Chief of Staff, Surgeon, and unit-level programs in the special forces groups (SFGs), the Ranger Regiment, the 160th Special Operations Aviation Regiment (SOAR), the U.S. Army John F. Kennedy Special Warfare Course and School (SWCS), and battalions of these operational units that are stationed in other locations. Each unit-level program consists of a human performance program coordinator and a given number of strength and conditioning coaches, physical therapists, dietitians, and cognitive enhancement specialists.¹

In anticipation of the program's expansion, USASOC asked RAND Arroyo Center to determine whether THOR³ is effectively utilizing the resources provided, with a particular emphasis on military, Army civilian, and contractor staffing. RAND was also asked to identify options for improving the program across the domains of doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P).

This study involved extensive interviews with THOR³ staff and consumers, site visits to several USASOC locations and collegiate sports and U.S. Olympic training facilities, and a review of subject-matter expertise in the fields examined.

General Findings and Recommendations

The following findings and recommendations are of general importance to USASOC, and they concern all elements of the THOR³ program.

¹ Cognitive enhancement is a formal part of the Army's comprehensive soldier fitness program, which seeks to provide "a systematic way to build mental and emotional strength for Warriors, family members, and DA Civilians" (see Comprehensive Soldier Fitness-Performance and Resilience Enhancement Program, homepage, undated, for details). The THOR³ program has both adopted this approach and adapted it to the SOF mission and warrior.

The decision about who participates in THOR³ is a command-level issue and affects funding for personnel, facilities, and equipment. There is a difference between how USSOCOM views the decision about which soldiers and units should participate in THOR³ and how that decision is viewed by USASOC leadership and staff. According to USASOC staff, USSOCOM has indicated that the program should be limited to “18-series” soldiers who are in special forces groups, soldiers in Ranger units, and selected personnel from the 160th SOAR. Restricting participation to this level would have a significant effect on personnel and facilities funding in particular. USASOC leaders feel that THOR³ should be open to all USASOC soldiers, and they have prepared personnel requests that reflect this.

The degree of decentralization of THOR³ program execution will affect both staffing and how the program operates. Currently, the program operates in an almost completely decentralized manner. This is appropriate for some functions (e.g., strength and conditioning), but it is less than ideal in other areas (e.g., cognitive enhancement)—at least in the short term. The ability to provide oversight and support, collect and disseminate best practices, develop funding requests for expensive items (such as cognitive enhancement equipment), and conduct assessments will be directly affected by USASOC leadership preferences for how the program is run. Our findings indicate that there are benefits to a decentralized approach if it can be adopted without significant loss of technical functionality. However, the development of program coordinators, oversight of cognitive enhancement (until it is a mature part of THOR³ and accepted by the USASOC community), and, possibly, the performance of certain administrative functions (e.g., best practices and assessments) will require leadership and real capability at the THOR³ headquarters office because USASOC is unlikely to be able to hire fully developed program coordinators.

The current THOR³ headquarters staff will be adequate only if its role is very modest—if it focuses on performing routine administrative tasks and coordinating the program. The headquarters office is not staffed to allow it to perform a substantive oversight role or to provide cross-USASOC management in any significant way (e.g., assessment of unit-level programs, advice or direction on technical matters). USASOC's request for staff includes a THOR³ headquarters office of six: a program manager; subject-matter experts in strength and conditioning, physical therapy, and dietetics; and an administrative specialist (all roles to be filled by Army civilians), as well as a data manager (contractor). This structure is likely adequate, with the possible exception of oversight for cognitive enhancement.

Finally, we note that one important element of USASOC is not included in THOR³ or this analysis: the reserve component. To the extent that reserve SOF soldiers are part of future operational plans, there should be a way to provide them with best practices and lessons learned from THOR³, if not full access to training and facilities.

DOTMLPF-P Findings and Recommendations

The following findings and recommendations address each component across the range of the Army's DOTMLPF-P domains. They are presented in an order that reflects USASOC's primary concerns and the areas that are most important to the program, rather than in the traditional order.

Organization

Findings and recommendations regarding organization address both requirements for personnel of a certain type and the structure of the program. Together, these two components define the program and what it can do.

Requirements Validation and Articulation

Properly articulated and validated requirements define the capabilities of the program, provide clear guidance on the roles of all players, help with hiring and retaining the right people, and provide needed information for the administration of the program. Interviews with ten THOR³ program staff in units at the O-6 and O-5 levels identified disconnects between the conceptual design of the program and its implementation. This finding may indicate a lack of knowledge of cognitive enhancement on the part of the unit-level human performance program coordinators. Some of these disconnects could be addressed by better statements of requirements.

Findings and recommendations that should help USASOC and the THOR³ headquarters office in this area are as follows:

- The THOR³ headquarters staff should clearly and carefully validate and articulate requirements for the unit-level program offices, which will assist it in more effectively administering the program. These requirements should be meaningful to those administering program at the unit level and based on detailed job analyses.
- Requirements for the THOR³ headquarters office should be tied to the USASOC leadership's expectations for THOR³ and the implied role of the headquarters office (e.g., the program's level of decentralization, the ability to share best practices across the command).
- At the unit level, the need for well-defined requirements is most evident with respect to cognitive enhancement specialists; program coordinators' perceptions of the need for these specialists are very different from those of the headquarters office.
- Requirements must be periodically reviewed and updated.

Structure

Along with validated requirements, the structure of the program is critical to determining its capabilities. Key findings and recommendations in this area include the following:

- The THOR³ headquarters office is understructured for all but the most minimum functions and should be expanded as planned if the USASOC leadership expects it to provide direction and oversight for the program.
- We recommend a thorough manpower analysis to forecast expected workloads and thus inform structure and staffing requirements.

Personnel

Given an adequate structure, the next question is whether THOR³ can attract and retain the right people to run the program in the right numbers. This includes the ability to define positions in ways that will permit USASOC's human resource managers to attract high-quality applicants and screen out inadequate ones. Hiring human performance program coordinators (whose specialty is strength training and conditioning) has been problematic due, in part, to the lack of a specified job series for this specialty and inadequately defined job criteria. One

option for solving the problem of inadequate job candidates being nominated for positions is direct hiring authority—that is, authority that would permit USASOC to hire personnel outside the typical practice in which the personnel system advertises a job, screens applicants based on specified criteria, and nominates the candidate who is “best qualified” for the job. Also important to USASOC is whether THOR³ personnel should be Army civilians or contractors. In our interviews, USASOC THOR³ personnel at the headquarters and program levels indicated a strong preference for Army civilians because they can be expected to stay with the units they support longer and may be more committed to those units. However, the experiences of similar programs indicate that contractors have also worked out well. Finally, all four of the specialties in THOR³ (strength and conditioning, physical therapy, performance dietetics, and cognitive enhancement) are expected to be in high demand nationally. THOR³ will have to compete to attract and retain these specialists in a competitive job market.

Our findings and recommendations in this area are as follows:

- The total number of personnel that the THOR³ program has requested appears adequate.
- Each specialty area in each supported O-6–level unit should have at least one Army civilian to provide continuity and understanding of the supported unit.
- THOR³ should have a personnel services contract that permits it to hire additional specialists to accommodate fluctuations in demand, as well as for special and temporary training or other needs.
- The mix of Army civilians to contractors should balance the command's preference for a stable, permanent workforce with flexibility in staffing levels (which is useful for controlling personnel costs—a necessity given the fluctuating client base in these units as a result of frequent deployments).
- USASOC should work with USSOCOM to perform a detailed job analysis of program coordinator and strength and conditioning coach positions to better categorize requirements under the existing job series in the short term, and it should pursue a new job series for these specialties in the long term.
- USASOC should not rush to request direct hiring authority; it does not meet the requirements, and creating a special job series for human performance coordinators and strength and conditioning coaches may solve the problem in the long term.
- USASOC should monitor the labor market for all THOR³ specialties and consider hiring and retention bonuses for fields in which staff have multiple, lucrative options.

Leader Development and Education

This research found some actual and potential gaps in the skills of program coordinators that the THOR³ program will need to address. In particular, current job descriptions do not indicate the need to manage moderately sized programs spread across multiple locations (in some cases), and our interviews found a lack of understanding of cognitive enhancement, generally. Furthermore, program coordinators must supervise staffs made up of medical and non-medical personnel.

The THOR³ program currently has no formal ability to develop its leaders or provide education for its staff. The responsibility is left to the individual staff member and the unit-level program coordinator to ensure that staff members stay technically proficient and develop appropriately. This is common practice for medical personnel who must keep current on their

technical skills. However, it does not prepare program coordinators and other staff for supervisory positions.

Our specific findings and recommendations for leader development and education are as follows:

- THOR³ needs to develop its program coordinators in three critical ways:
 - Ensure that they understand the purpose for and how best to use the four types of specialists who make up their teams; this should be a priority. USASOC's Special Operations Center for Enhanced Performance (SOCEP) can help THOR³ headquarters develop such a program.
 - Ensure that they are able to supervise a multifunctional team that includes individuals who deliver medical care with support and supervision from unit medical personnel and the medical treatment facility. USASOC medical personnel in the Office of the Deputy Chief of Staff, Surgeon, and at the unit level can help develop and implement such training.
 - Ensure that they are able to supervise much larger staffs than they currently have—in some cases, in more than one location. This is a standard supervisory capability that THOR³ headquarters and supported unit personnel can assist in developing.
- THOR³ program coordinators should monitor the currency of the professional credentials of their strength and conditioning staff, and THOR³ headquarters staff should monitor the currency of the program coordinators.

Facilities

USSOCOM has determined (though not published) criteria for human performance program facilities. None of USASOC's facilities currently meet this standard, though the 1st Special Forces Group facility comes close. To address this shortfall, we offer the following findings and recommendations:

- Each USASOC unit that has been authorized a THOR³ program should have a training facility that meets USSOCOM standards, and, accordingly, USASOC should submit military construction requests to USSOCOM.
- SFGs, Ranger Regiment units, and the 160th SOAR should be given top priority for THOR³ facilities, with the 160th first in line due to the tornado damage its facilities sustained in 2011.
- Facilities for the U.S. Army Special Forces Command, 4th Military Information Support Group, 95th Civil Affairs Brigade, 528th Sustainment Brigade, and 112th Signal Battalion should be built to coincide with the creation of their THOR³ programs.
- A new facility for SWCS should be built after all unit facilities are in place.
- While USASOC requests military construction funds to build new facilities, it also should examine the use of temporary facilities to fill shortfalls.
- USASOC should adopt a unit status report–like assessment framework to track the adequacy of its facilities and make their status known to USSOCOM.

Materiel

Of the areas examined in this research, materiel considerations pose the fewest problems for USASOC. The current decentralized approach, in which USASOC units purchase equipment

out of their operating budgets, seems to work well. The one potential concern, due to its cost (approximately \$400,000 per SFG), is cognitive enhancement equipment, which is not yet fielded at the unit level. The following findings and recommendations address the THOR³ program's materiel needs:

- USASOC should continue to let subordinate units enjoy autonomy when it comes to materiel identification and acquisition for the physical side of THOR³.
- For the mental side of human optimization (cognitive enhancement), the THOR³ headquarters office should provide subordinate units with assistance in equipment selection.
- Lessons from SOCEP and USSOCOM guidelines should be used in developing cognitive enhancement equipment requirements.
- THOR³ headquarters should help units develop funding requests for cognitive enhancement equipment in tandem with fielding cognitive enhancement specialists at the unit level; the equipment and specialists are quite expensive, and supported units may need assistance to pay for them.
- No formal assessments of materiel are needed.

Training Assessment

The USSOCOM initial capabilities document that stipulates the requirements for and goals of THOR³ articulates a target of 20-percent improvement in all aspects of human performance, rehabilitation, and recovery. According to the experts interviewed for this study, as well as USSOCOM staff responsible for overseeing THOR³ and similar programs in other USSOCOM commands, these expectations are unrealistic; because these soldiers already maintain a high level of fitness, such large improvements are impossible. Consequently, developing assessment protocols to demonstrate that THOR³ is meeting these expectations is not in the best interest of USASOC. Furthermore, there are no well-defined assessment tools for cognitive capability, which makes measurements in this field problematic. Our specific recommendations are as follows:

- USSOCOM should revise the assessment criteria, and develop appropriate metrics, so that they correspond to best practices in high-level sports and are useful to commanders. USSOCOM should also ensure that it is not too labor-intensive for the units running these programs to easily collect the appropriate data.
- Progress should be monitored at the individual and small team levels, not across USASOC or the THOR³ program as a whole. Program- or command-wide progress assessment would require significant resources to do well, and soldiers in different units have different needs, further complicating such a task.
- Unit-level programs should share best practices and analyses with headquarters and other unit programs.
- THOR³ should work with SOCEP to develop assessment protocols as cognitive enhancement specialists are fielded to units.
- USASOC should periodically ask an external organization in DoD or under contract to conduct independent assessments of the THOR³ program; this organization could also assist in updating or developing new criteria and metrics. This would provide USASOC with an objective assessment of THOR³'s efforts that would be impossible for the program to provide by itself.

Doctrine and Policy

Little can be said about the doctrine or policies that THOR³ could affect. However, if it did have such an impact, it would most likely be in the way that the Army conducts physical fitness training overall. Good practices from THOR³ should be replicated throughout the Army to the extent that this can be done safely without a large, professional coaching staff to supervise physical training.

Final Observations

THOR³ is an innovative program that is intended to support the development and maintenance of USASOC's most important—and hard-to-create—asset: SOF soldiers. Despite the absence of adequate data to quantitatively demonstrate that its goals are being achieved, the logic behind the program's design appears sound. The Army should consider conducting further research into a THOR³-like program for reserve-component forces, along with longitudinal research and assessments of how such an initiative could be more useful to broader communities of interest (such as the military medical community and the U.S. Army in general).

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Abbreviations

ACE I	Army Combative Element I
APFT	Army Physical Fitness Test
BLS	Bureau of Labor Statistics
CEP	Center for Enhanced Performance
CEU	continuing education unit
CSF-PREP	Comprehensive Soldier Fitness-Performance and Resilience Enhancement Program
CME	continuing medical education
CSCS	Certified Strength and Conditioning Specialist (credential)
DoD	U.S. Department of Defense
DOTMLPF-P	doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy
FY	fiscal year
ICD	initial capabilities document
LDE	leader development and education
MTF	medical treatment facility
NSCA	National Strength and Conditioning Association
ODA	operational detachment–alpha
OPM	U.S. Office of Personnel Management
OPTEMPO	operational tempo
POTF2	Preservation of the Force and Families
RAW	Ranger Athlete Warrior
SFG	special forces group
SOAR	special operations aviation regiment

SOCEP	Special Operations Center for Enhanced Performance
SOF	special operations forces
SWCS	U.S. Army John F. Kennedy Special Warfare Course and School
TAP	Tactical Athlete Program
THOR ³	Tactical Human Optimization, Rapid Rehabilitation and Reconditioning
TOE	Table of Organization of Equipment
USAMAA	U.S. Army Manpower Analysis Agency
USASFC	U.S. Army Special Forces Command
USASOC	U.S. Army Special Operations Command
USR	unit status report
USSOCOM	U.S. Special Operations Command

Introduction

Truth number 1 of special operations forces (SOF) is that “Humans are more important than Hardware.”¹ U.S. Army Special Operations Command (USASOC) and its parent organization, U.S. Special Operations Command (USSOCOM), recognize not only the special physical, mental, and experiential characteristics of USASOC soldiers, but also the significant investment in time and money it takes to cultivate them. USASOC has created the Tactical Human Optimization, Rapid Rehabilitation and Reconditioning (THOR³) program to increase the physical and mental capabilities of SOF soldiers, help them recover more rapidly from injuries sustained in combat or in training, and help them stay healthy and able to contribute longer.²

THOR³ differs significantly from existing Army physical fitness programs in that it

- is a holistic program of physical and mental performance enhancement coupled with physical therapy services
- is focused on the individual and small team and accommodates tailored programs for specific missions
- uses professional sports-quality staff to provide coaching in strength and conditioning, physical therapy, dietetics, and cognitive enhancement.³

¹ The SOF Truths are as follows:

1. Humans are more important than Hardware
2. Quality is better than Quantity
3. Special Operations Forces cannot be mass produced
4. Competent Special Operations Forces cannot be created after emergencies occur
5. Most Special Operations require non-SOF assistance. (U.S. Army Special Operations Command, “SOF Truths,” web page, undated)

² U.S. Army Special Operations Command, “Tactical Human Optimization and Rapid Rehabilitation and Recovery,” briefing, July 2010, slide 4.

³ Cognitive enhancement is a formal part of the Army’s comprehensive soldier fitness program (CSF-PREP; see Comprehensive Soldier Fitness-Performance and Resilience Enhancement Program, homepage, undated). According to the program’s website, the performance enhancement component uses the CSF-PREP Performance Enhancement Model, which is

based on over four decades of scientific research and recognized best practices in the field of sport and performance psychology. The tenets underlying excellence in human performance are applicable to all professional occupations. The mental and emotional skills required to excel on the athletic field are similar to the skills underlying excellence on the battlefield, in the classroom, in the workplace, and at home. Given this understanding of human performance, CSF-PREP tailors the delivery of the program to meet the needs of a wide spectrum of Army organizations and populations.

The THOR³ program has adopted this approach and adapted it for the SOF mission and warrior.

The goals of THOR³ are also different from those of existing Army physical training programs in that they include (as the name indicates) not only human performance enhancements but also a rapid rehabilitation and return to duty from injuries. Although it is different from other Army programs, there are similar programs in USSOCOM, as we discuss later in this report.

Although THOR³ is a relatively new program, there are plans to expand it in the near future. THOR³ hired its first program-level staff in fiscal year (FY) 2010.⁴ It is currently composed of a small headquarters office under the USASOC Deputy Chief of Staff, Surgeon, and unit-level programs at the special forces groups (SFGs), the Ranger Regiment, the 160th Special Operations Aviation Regiment (SOAR), the U.S. Army John F. Kennedy Special Warfare Course and School (SWCS), and battalions of these operational units that are stationed at locations other than the O-6-level command to which they belong. There are plans to expand THOR³ to all USASOC commands in the future and to increase its staff size at all levels.⁵ The headquarters office is authorized a U.S. Department of the Army civilian program director and an administrative specialist.⁶ Each unit-level program consists of a human performance program coordinator, who reports to the supported unit and the THOR³ headquarters office, as well as a group of strength and conditioning coaches, physical therapists, dietitians, and cognitive enhancement specialists whose numbers are determined by the size of the supported unit and the maturity of its THOR³ program. The supported unit operations officer (S-3) supervises these unit-level programs.

Study Purpose

USASOC asked RAND Arroyo Center to determine whether the THOR³ program is effectively utilizing the resources provided, with a particular emphasis on military, Army civilian, and contractor staffing, and to identify options for improving the program's structure. The study considered the following program characteristics:

- conceptual planning and implementation
- how the program management team has utilized resources overall, across programs, and across functions (unit types)
- facility requirements
- ability to fully support all assigned USASOC personnel.

This report proposes recommendations that address doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) needs.⁷

⁴ Discussions with THOR³ staff, April 2012.

⁵ The Army Combative Elements I and II have their own programs and will not be covered by THOR³. See Table 3.1 in Chapter Three for current and planned program size.

⁶ THOR³ also had a military dietitian on loan from Womack Army Medical Center, the Fort Bragg medical treatment facility (MTF), during the period of this research, November 2011–May 2012.

⁷ USASOC study request, August 2011, provided to RAND Arroyo Center as part of its fiscal year 2012 research agenda development.

In the remainder of this chapter, we provide some background on the THOR³ program and describe the methodology used in this study.

Background

USASOC thinks about its “soldier-athletes” in a way that is similar to how high-level sports programs (i.e., professional, collegiate Division IA, or Olympic-level programs) think about their athletes. That is, both types of teams depend critically on their people to win and, as a result, require investments in their performance, health, recovery, and longevity. An analogy can be made to other elements of the U.S. armed forces that are more technology-focused. The U.S. Air Force, for example, invests heavily in the upkeep and modernization of its aircraft—in the form of top-quality maintenance personnel, facilities, and equipment. Similarly, USASOC, through THOR³, looks to bring in the best trainers and specialists, and to have the right facilities and equipment to maintain its investment. This means top-quality people (all are required to have appropriate technical credentials and experience in high-level sports), facilities, and equipment—all of which require investments and are important to maintaining USASOC’s soldier-athletes. Three additional program characteristics informed the RAND study team’s approach to its examination of THOR³.

THOR³ Is Not a Unique Program

THOR³ falls under USSOCOM’s Preservation of the Force and Families (POTF2) Task Force. Other elements of USSOCOM have similar programs. Of particular note is the U.S. Naval Special Warfare Command’s Tactical Athlete Program (TAP), which has been in place longer than THOR³. However, THOR³ is the largest and most comprehensive program of its type in that it includes not only physical fitness and recovery elements, but a cognitive enhancement component as well.

USSOCOM Funds THOR³

For this reason, it is important that USASOC and USSOCOM agree on the scope of the program. However, USASOC staff informed us that there is one potentially significant area of disagreement between USASOC and USSOCOM with regard to THOR³: which USASOC units should have THOR³ programs.⁸ USASOC’s position is that all of its units should have such programs, whereas USSOCOM staff indicated that THOR³ should be limited to SFGs, Ranger Regiment units, and the 160th SOAR. According to the initial capabilities document (ICD) for the program, which outlines its requirements, THOR³ is available only to “special operators”:

SO [special operations] JFHP [Joint Force Health Protection] and SO Human Capital Preservation Strategy requires an enhanced capability to preserve the force and facilitate reconstitution by reducing occupational injuries, minimizing effects of those injuries and expediting the rapid recovery, reconditioning and return of the operator to a baseline SO performance capability. These types of injuries and insults are not SOF peculiar and Services provide the basic treatment and nominal rehabilitation to a level of Service health.

⁸ Discussions with USASOC staff, December 2011–April 2012.

However, the shortage of SOF personnel, the investment in their selection and training and the extraordinary physical and mental condition that they must return to before they are again deployable is SOF peculiar. Likewise, many of the SOF skills are similar to skills required of conventional combat elements. However, the level of performance at which SOF is required to perform those skills in the harshest of conditions is SOF peculiar.⁹

Strictly speaking, U.S. Army Human Resources Command classifies special forces, Rangers, special operations aviators, military information support operations personnel, and civil affairs soldiers and units as SOF.¹⁰ However, according to USASOC staff, USSOCOM would prefer to limit this definition to just special forces (18-series), Ranger Regiment, and selected SOAR soldiers. USASOC disagrees. The resolution to this question has significant cost implications because personnel, facilities, and materiel decisions are made with respect to the size of the serviced population.

THOR³ Has Both Medical and Nonmedical Staff Members Who Are Supervised and Supported in Different Ways

Unit-level THOR³ programs are supervised by the supported unit operations officers (S-3). However, the MTF supervises medical personnel on any Army post in their medical roles and determines how important aspects of medical treatment are provided. As a result, USASOC has a limited voice in how the MTFs provide medical support to THOR³ medical professionals (i.e., physical therapists, dietitians, and some cognitive enhancement specialists).¹¹ For example, a THOR³ physical therapist might want to treat the maximum number of soldiers possible in his or her local facility to minimize the number of referrals to the MTF. To do this, he or she could seek a formalized agreement, such as a memorandum of agreement, between the THOR³ supported unit and the local MTF to coordinate for such services as the provision of advanced pain-control medications, if necessary, under the supervision of the unit's medical doctors. However, the USASOC Surgeon's office (under which THOR³ falls) cannot stipulate protocols or develop one agreement with Army-level medical officials on this. Rather, all arrangements need to be made with the local MTF commander. As a practical example, Naval Special Warfare Command's TAP has memoranda of agreement with local MTFs to have an orthopedic surgeon designated to support the program, and these doctors visit the supported units regularly to provide care. The Army Combative Element I (ACE I) also has such an arrangement. This availability likely increases the quality of care that Navy SEALs (sea, air, land) and ACE I soldiers receive and saves time that can be used on more important efforts.¹²

⁹ U.S. Army Special Operations Command, *Initial Capabilities Document (ICD) for Warrior Rehabilitation Performance Centers*, February 20, 2009.

¹⁰ For the categories, see U.S. Army Human Resources Command, "Officer Personnel Management Directorate," web page, last updated October 4, 2012.

¹¹ Although USASOC has its own medical assets that are part of the operational units served by the THOR³ programs, these assets must follow the procedures established by the local MTF commander for the administration of care. As a result, the USASOC Office of the Deputy Chief of Staff, Surgeon, cannot develop and promulgate policy on many issues and, in those cases, must rely on the MTF commander for assistance. For example, USASOC units are not permitted to have a pharmacy because that falls under the domain of the MTF, but they are often permitted to maintain a basic load of pharmaceuticals that USASOC medical personnel can dispense as part of their routine duties, because doing so has training value. Discussions with USASOC Office of the Deputy Chief of Staff, Surgeon, personnel, March 2012.

¹² Interviews with TAP and ACE I physical therapists; TAP administrative instructions.

Medication Management Is an Important Element of THOR³ That Could Be Improved

Currently, the only THOR³ provider who has the authority to write a prescription for medication is the physical therapist, who must be a Category II privileged provider with additional education, training, and board certification, but he or she can write prescriptions to treat musculoskeletal conditions only.¹³ The scope of these medications does not cover even the most basic antibiotic or narcotics for pain relief. Therefore, a primary care provider with prescriptive authority should be available to the medical staff for consultation and to prescribe medication for THOR³ clients. The supported unit's medical personnel can perform these services in coordination with THOR³ medical personnel, but arrangements for pharmaceuticals to be available in the unit area would further save soldiers' time and maximize their use of treatment. Although pharmacy services are managed by the local MTF, not the unit, there are options for providing medications in the units. For example, in some locations, USASOC units are permitted to keep pharmaceuticals on hand for training purposes,¹⁴ and automated methods for dispensing drugs can be fielded (though the medications would still be owned by the MTF).¹⁵

Methodology

This research was conducted primarily through interviews and site visits. We interviewed key personnel in THOR³ and similar programs (i.e., TAP and ACE I) and at USSOCOM. We visited selected THOR³ facilities, where we looked at the facilities and equipment and talked both to those who are administering the program and to USASOC soldiers (those participating in THOR³ and, in some cases, representatives of the unit chains of command).¹⁶ We also visited a collegiate Division IA athletic facility and the Olympic training facility in Colorado Springs as points of comparison for the THOR³ program. Additionally, we visited the ACE I facility and talked to staff there. Finally, we visited with and discussed THOR³ with representatives from the Neuromuscular Research Laboratory in the University of Pittsburgh's Department of Sports Medicine and Nutrition, which has expertise in working with professional athletic programs and is conducting a detailed physiological analysis of THOR³.

To prepare the research team for this task and to gather additional information, we also conducted a literature review. We reviewed literature specifically on THOR³, the Naval Special Warfare Command's TAP administrative guidelines, professional literature on sports medicine and related fields, and relevant government documents, including briefing slides provided to the RAND team specifically for this effort.

Our interviews and literature review informed our understanding of the DOTMLPF-P elements of the THOR³ program and helped us form findings and recommendations. In some cases, we were able to draw objective conclusions (e.g., a facility does or does not meet set standards); in other cases, we needed to make subjective judgments. Throughout this report, we clearly distinguish between the two. We do not place ourselves in the position of the deci-

¹³ Army Regulation 40-68, *Clinical Quality Management*, Washington, D.C., February 26, 2004, revised May 22, 2009, p. 42.

¹⁴ Interview with COL Russ Kotwal, Deputy Command Surgeon, USASOC, April 2012.

¹⁵ As an example of the latter, the U.S. Air Force Academy has fielded pharmaceutical vending machines in its sports facilities from which providers can immediately dispense medication to athletes who need it.

¹⁶ See Appendix C for a list of the sites visited.

sionmakers at USASOC or USSOCOM but instead seek to provide insights into the pros and cons of various options and to provide input to assist USASOC leaders in making their own decisions.

Overview of This Report

This chapter introduced THOR³ and provided some observations that inform the subsequent review of the DOTMLPF-P characteristics and implications of the program. The remainder of this report is organized to address USASOC's most pressing DOTMLPF-P issues. Because personnel issues are the most important, according to USASOC staff, we begin with organization and personnel in Chapters Two and Three, respectively. Chapter Four focuses on leader development and education. Chapter Five looks at the adequacy of facilities, materiel, and training assessments. Finally, Chapter Six addresses doctrine and policy, and Chapter Seven pulls together our key observations, findings, and recommendations.

Organization

This chapter examines the organizational aspects of the THOR³ program. We first summarize the research approach used for this portion of the study and then follow with an analysis of the program's organizational requirements and structure. Finally, we provide recommendations for changes and assessments.

To assess organization, we employed a multipart research approach that included reviews of key documents (provided by USASOC), reviews of the larger body of evidence on comparable programs both inside and outside the U.S. Department of Defense (DoD), and semi-structured telephone interviews with 13 Army civilians serving in THOR³ program key leadership positions. We inquired about the background and credentials of our interview subjects and determined that they were all experts in their respective fields.¹ The interview protocol was prescreened by the THOR³ program office and, with one exception, was provided to interviewees at least a week in advance of our interviews.² The same approach was used to conduct the analysis of personnel in Chapter Three.

Requirements

In this section, we provide a brief review of the goals of the THOR³ program and the functional areas of expertise required for attaining these goals. We then discuss the three U.S. government civilian job series implied by these requirements. (A fourth, cognitive enhancement specialist, may be necessary if planned contractor hires are eventually converted to government civilians.)

THOR³ Required Functional Areas of Expertise

The THOR³ program is designed around three functional areas of expertise associated with sports medicine: optimizing human performance, rehabilitation, and reconditioning. Collectively, this expertise was deemed essential to meeting the program goals of reducing the number of preventable injuries, speeding injured or wounded soldiers' recovery and return to duty, and providing SOF soldiers with the resources necessary to maximize their ability

¹ The THOR³ program office identified the personnel to be interviewed for this phase of the study and provided their contact information. We note that because they are Department of the Army civilian employees of THOR³, their responses to interview questions may be influenced by that relationship.

² The THOR³ coordinator for 7th SFG was hired near the end of our study period and, for that reason, was not interviewed initially and did not receive the interview protocol a week in advance of the interview.

to perform.³ Table 2.1 summarizes these functional areas of expertise and their attendant goals. We began our analysis by examining these areas and identifying what is needed to deliver the associated services.

USASOC has identified four program elements, which also correspond to position types, as vital to providing the expertise required for the THOR³ program: strength and conditioning, physical therapy, performance dietetics, and cognitive enhancement (see Table 2.2).⁴ The expertise associated with these positions involves high levels of technical competency, including experience at the professional, Olympic, or intercollegiate sports levels. These high-level skills must be further tailored to the particular needs of USASOC soldiers across a range of occupational specialties, given the range of unique characteristics and needs of USASOC units and the soldiers in them.

Just as important, the THOR³ program is designed to (1) educate and train USASOC personnel in effective techniques for improving and enhancing physical and mental functional capacity, (2) decrease or prevent injuries, (3) reduce time lost to injury by enhancing the rehabilitative process, and (4) accelerate rehabilitation and return to duty through a structured program focused on optimizing technology. Thus, THOR³ aims to improve performance and rehabilitation through strength and conditioning, physical therapy, performance dietetics, and cognitive enhancement activities.⁵

Returning to the functional areas of expertise (as shown in Table 2.1), we note that codifying the three areas of expertise required by THOR³ and aligning them with program goals gives rise to a useful, implementable construct. Specifically, it frames requirements and defines the positions, enabling the THOR³ program to identify and hire experts in the needed fields. Table 2.2 lists these positions and their government job series, discussed in greater detail in the following section.

Human Performance Program Coordinator

The first position in Table 2.2 is human performance program coordinator, responsible for “planning, developing, and implementing a formalized strengthening, conditioning, and human performance training program to decrease injury rates and improve functional capac-

Table 2.1
Required Functional Areas of Expertise

Area of Expertise	Goal
Optimizing human performance	Producing SOF soldiers who are as fit as possible, preventing injuries, and laying the groundwork for rapid recovery should a soldier become injured; includes both physical and mental fitness
Rehabilitation	Rehabilitating injured soldiers to the point that they are physically able to enter a reconditioning program that will return them to full capability
Reconditioning	Reconditioning SOF soldiers so they can rejoin their units at full capability

³ These requirements were developed by USASOC in conjunction with USSOCOM and were provided to the project team for this study.

⁴ At the time of this writing, only one THOR³ team had a cognitive enhancement specialist, and that person has held the position for only a short period.

⁵ See also Paul S. Burton, James H. Nance, and David C. Walton, “Lethal Weapon: DRSE Builds SOF’s Greatest Weapon—The Minds of Its Soldiers,” *Special Warfare*, March–April 2011.

Table 2.2
THOR³ Positions, Associated Government Service Series, and Descriptions

Position	Office of Personnel Management Job Series	Description
Human performance program coordinator (includes strength and conditioning)	General Health Science Series, 0601	Plans, develops, and implements formal strength, conditioning, and performance programs to decrease risk of injury and improve functional capacity of SOF soldiers
Physical therapist	Therapist Series, 0633	Provides full range of professional physical therapy services, including screening and diagnostics
Performance dietitian	Dietitian and Nutritionist Series, 0630	Implements and delivers a comprehensive nutrition program covering all aspects of optimal health, performance, and rehabilitation
Cognitive enhancement specialist	Psychologist Series, 0180 (likely)	Facilitates the functioning of a “mind-body” weapon system, enabling mission execution as SOF soldiers negotiate increasingly complex, ambiguous operating environments (contractor-only structure and fill as currently planned) ^a

^a USASOC has not yet designated a specific GS job series for this billet. This is one option.

ity for Special Forces Soldiers.”⁶ Also referred to as the “strength and conditioning coach,” this individual tailors his or her training program to prepare USASOC personnel to perform in the areas to which they will deploy. This includes preparation for topographical conditions (e.g., mountain, desert, jungle) and for climatic extremes (extreme cold, extreme heat). Interviews with THOR³ headquarters personnel and program coordinators, as well as reviews of position descriptions, credentials of incumbents, and USASOC materials, indicated that individuals currently filling these positions are both professionally well developed and valued by supported USASOC organizations and individuals.

Physical Therapist

The second THOR³ position that we considered was the physical therapist. This individual fills the critical requirement for rehabilitating injured or wounded soldiers who are unable to physically perform their missions. While rehabilitation and physical therapy is a mature field, similar programs in USASOC (the ACE I program) and USSOCOM (TAP) have shown that highly conditioned soldier-athletes have faster recovery times than soldiers without such preparation.⁷ Thus, rehabilitation and recovery are not simply a function of having skilled physical therapists; they also depend heavily on the strength and conditioning element of THOR³.

Performance Dietitian

The third position listed in Table 2.2 is performance dietitian. This individual seeks to improve the nutrition and body composition of USASOC soldiers. Nutrition coaching considers all aspects of health, performance, and rehabilitation and reconditioning. Because nutritional choices that affect USASOC soldiers in a given unit are made by various individuals—unit dining facility staff, family members, the creators of packaged food (such as meals ready to eat, or MREs), and the soldiers themselves—education and individual coaching will likely

⁶ Human performance coordinator position description provided to RAND, dated January 2011.

⁷ Interviews with TAP and ACE I program staff, February and March 2012, respectively.

require a considerable amount of time. The importance of nutrition has been demonstrated in similar programs in other special units, which reported that nutrition questions constituted a large part of the queries fielded. For example, at the inception of one program, nutrition issues accounted for about 80 percent of all participant questions.⁸

Cognitive Enhancement Specialist

The final position that we considered was the cognitive enhancement specialist.⁹ So far, we have focused on the physical aspects of returning injured or wounded soldiers to full capability and optimizing fully capable soldiers' performance. Cognitive aspects of performance and recovery are also important, as demonstrated by the use of performance psychologists among professional and collegiate-level sports teams. USASOC plans to take advantage of this element of performance and recovery through what it calls "cognitive enhancement." USASOC's goal for including cognitive enhancement specialists on unit-level THOR³ teams is to improve the performance of the "mind-body" weapon system, enabling SOF warriors to execute missions confidently as they negotiate increasingly complex, ambiguous operating environments.¹⁰

In many respects, the Army is a leader in this field. The United States Military Academy, or West Point, created its Center for Enhanced Performance (CEP) in the early 1990s,¹¹ and the faculty there was instrumental in exporting the approach to the Army.¹² The Army now includes a similar approach in its comprehensive soldier fitness program. USASOC's Special Operations Center for Enhanced Performance (SOCEP) in SWCS uses the West Point approach to help soldiers better understand the connections between their mental and physiological functions and their performance.¹³ However, THOR³ is only starting to implement this element of its approach; as of this writing, it had hired only one cognitive enhancement specialist as a contractor.

While SOCEP has a well-developed concept for cognitive enhancement, THOR³ has not developed specifics for how to implement it in the unit programs.¹⁴ In particular, while the

⁸ Discussions with ACE I human performance staff, March 2012.

⁹ As of this writing, USASOC had hired only one cognitive enhancement specialist as a contractor, but it planned to hire more. This discussion and Table 2.2 assume that USASOC will want the option to hire some of these specialists as government service employees.

¹⁰ Burton, Nance, and Walton, March–April 2011.

¹¹ According to an email exchange with a West Point CEP staff member, April 2012, mental skills training got started on a small scale at the school in 1988 when the faculty began working with a small group of Army football players on visualization, goal setting, and stress management at what was called the Performance Enhancement Center. Over the next three years, this program expanded to the point that a full-time civilian sports psychology expert (who is still on the faculty) was added in 1992 to the staff of four military officers. In December 1993, the Performance Enhancement Center merged with the preexisting Reading and Study Skills Program to form what is now known as the Center for Enhanced Performance.

¹² Interviews with West Point CEP staff, February and March 2012. The center teaches a combination of reading, study, and applied performance psychology skills to help cadets meet their athletic, academic, and military potential. Its focus is on helping cadets achieve these goals by becoming self-directed learners, an approach that is not identical to that used by sports psychologists. Skills emphasized are attention control, confidence, goal setting, visualization, self-assessment, stress management, and time management. See Center for Enhanced Performance, United States Military Academy, homepage, undated.

¹³ Interviews with SOCEP staff at Ft. Bragg, N.C., March 2012.

¹⁴ Our interviews at West Point and SOCEP indicated that the skills to be taught are generally the same for all units. However, SOCEP staff indicated that because these skills will be exercised in different tasks and environments by different units, implementation will not be uniform.

skills for cognitive enhancement are similar for all endeavors, the ways in which they are applied to a particular task will be unique. As a result, each unit may have different requirements for its cognitive enhancement specialists, depending on the types or tasks the unit's soldiers perform.¹⁵ To address this variation, THOR³ headquarters staff would need to (1) properly assess and formulate the cognitive enhancement specialist manpower needs for each supported unit, (2) identify and hire specialists who are right for each unit, (3) ensure that program coordinators are able to supervise cognitive enhancement specialists, and (4) make proper use of the technical equipment that would accompany a cognitive enhancement function (once it is in widespread use). We present our specific recommendations later in the chapter.

Program coordinators did not perceive the same need for cognitive enhancement specialists (reporting eight needed) as the USASOC elements included in our interviews (which reported needing 49).¹⁶ Of note, USASOC indicated that there is Joint Staff support for the creation of Army civilian billets for only the first three positions listed in Table 2.2; whether cognitive enhancement specialists would simply remain under contract or eventually be targeted for conversion to DA civilian positions was unclear as of April 2012.¹⁷

Job Series Associated with THOR³ Requirements

In Tables 2.1 and 2.2, respectively, we introduced the required functional areas of expertise and the related positions (and corresponding U.S. government service job series) for the THOR³ program. Human performance positions, classified under GS-0601, General Health Science Series, correspond structurally to the functional requirement for optimization of human performance. Program office heads, hired as human performance program coordinators, now carry the GS-0601 designation but are also responsible for overseeing the performance and coordination of the entire unit effort. Physical therapist positions, classified GS-0633 for government hires (versus contractor), combine rehabilitation and a share of the reconditioning functional areas. The third position, performance dietitian, currently filled by contract personnel (but to be categorized as GS-0630 for government hires), contributes to human optimization and preparing soldiers to perform at their best in training and combat.¹⁸ Finally, as of April 2012, only one cognitive enhancement specialist position was filled (by a contractor). Should Army civilians be hired for any of these positions, they would likely be hired under GS-0180, Psychologist Series.

Interestingly, THOR³ interviewees (ten program coordinators and three physical therapists) uniformly disagreed with the use of contracting for significant numbers of most specialties in the short or long term. Their reasons ranged from individual commitment to units and missions (viewed as less likely among contractors, in some cases) to their own inability to properly supervise these individuals, given the perception that contractors are principally loyal to the company that pays them. In addition, THOR³ headquarters staff asserted that contracting for positions can be expected to cost at least 15 percent more than hiring Army civilians

¹⁵ Interviews with SOCEP staff, March 2012.

¹⁶ USASOC requests as part of the POTF2 program (not yet approved), provided to RAND by the THOR³ headquarters office staff, March 2012. See Table 2.4 for details.

¹⁷ Discussions with THOR³ headquarters personnel, January 2012.

¹⁸ As discussed in greater detail in Chapters Three and Four, the program heads at the O-6 command level do not seem to have an adequate appreciation for the roles played by dietitians or cognitive enhancement specialists.

over the life of the contractors' employment.¹⁹ However, the experience of a similar program indicates a different outcome.²⁰ According to both military and contractor staff working for ACE I, in which all civilian employees are contractors, contractors have had very good results. Contract staff are dedicated and competent, and having contract rather than Army civilian staff has permitted the command both to shed personnel who did not work out and to bring in temporary help when workload increased or short-term specialists were needed (e.g., to provide additional classes on nutrition to cooks in the dining facility). Given the challenges of dismissing government employees once they are in permanent billets, as well as USASOC's high operational tempo (OPTEMPO) and short-notice requirements (which can cause the serviced population at any major subordinate command to fluctuate over time), some mix of Army civilian and contract employees seems prudent.

THOR³ Program Structure

We now examine the functionality of the program's organizational structure within USASOC.

Based on input from RAND interviews on workload, program structure clearly appears inadequate to the task right now and more so in some areas than others, though it should be noted that we have no data on demand that would permit a formal analysis and hence cannot categorically state that structure and staffing are too low. The THOR³ program headquarters element is currently minimally structured (and staffed), with three people currently serving in a two-person cell; one of the three is a DA civilian program manager, one is a contractor who helps with data and administrative tasks, and one is borrowed military manpower. The program falls under the direction of the USASOC Deputy Chief of Staff, Surgeon. THOR³ is further comprised of separate unit-level program offices. These support the key subordinate commands of USASOC: five SFGs, the Ranger Regiment, 160th SOAR, and SWCS. There are plans to support USASOC's other O-6-level commands as well, including the 95th Civil Affairs Brigade, 4th Military Information Support Group, and 528th Sustainment Brigade.

Each O-6-level command has a THOR³ team, as do O-5-level commands that are not colocated with their parent units. Subprograms in support of these elements also appear to be both understructured and understaffed, with strength and conditioning specialists and physical therapists in the largest numbers, dietitians underutilized, and cognitive enhancement specialists not yet fielded.²¹ More important, though, subordinate program offices (and the overall structure) exist solely for the purpose of delivering services in THOR³'s required functional areas of expertise to supported units.

We interviewed program coordinators from ten THOR³ program offices that spanned the globe, from the United States to Germany to Japan. In three of these instances, we interviewed both the program coordinators who ran the local THOR³ programs and the rehabilitation coordinators (physical therapists) assigned to the particular office. These interviews provided us with the perspectives of experienced personnel at each location. We conducted

¹⁹ Estimates provided by the THOR³ headquarters office, October 2011.

²⁰ Interview with ACE I staff, March 2012. Contractors for this program are provided by API. That contract is structured with a good amount of nonspecified contact hours that the command can use as needed in response to requirements.

²¹ Interviews with program coordinators and physical therapists, April 2012. As mentioned earlier, only one cognitive enhancement specialist had been hired as of this writing.

interviews in conjunction with visits to selected offices across nine programs. Table 2.3 shows the locations of interviewees and USASOC unit(s) supported. Additionally, we examined the THOR³ headquarters office program structure with respect to the tasks it performs and in comparison with its counterpart at the Naval Special Warfare Command's TAP.²² Using these interviews and multiple discussions with THOR³ headquarters personnel, we were able to draw several conclusions.

First, the THOR³ headquarters office appears to be inadequately staffed to provide proper oversight and direction for future activity. Such oversight and direction would include, for example, the acquisition and development of new staff, facilities upgrades, quality control over expertise imparted to USASOC soldiers, the acquisition and sharing of research trends, processing of selected personnel, and administrative activities (e.g., producing temporary duty orders, processing travel vouchers). Importantly, the limited staffing at the headquarters office precludes frequent and substantive contact with supported commands and efforts in the form of developing and promulgating lessons learned and performing quality control, which could provide significant benefits to the program. An experienced supervisor who knows the USASOC community well runs the headquarters, but excluding a dietitian on loan from the MTF, it contains no staff with technical knowledge of the fields listed in Table 2.2.

Turning next to how the programs are performing, we note that while there are data that can help coaches track individual performance, there do not appear to be data that would enable objective conclusions about the performance of THOR³ programs at the unit level. However, our impression from our interviews, as well as from interviews and informal discussions with commanders, staff, and soldiers in some supported units, was that there is a universally positive opinion of the program's performance. The program offices operate semiautonomously under the supervision of the respective units that they support (through the S-3). They provide programs tailored to individual and unit needs. The program coordinators administer their programs with strong feedback from clients (currently overwhelmingly positive, accord-

Table 2.3
THOR³ Program Offices and Supported USASOC Elements

Location	Supported Element
Ft. Lewis, Washington	1st SFG
Ft. Bragg, North Carolina	3rd SFG
Ft. Bragg, North Carolina	5th SFG
Eglin Air Force Base, Florida	7th SFG
Ft. Carson, Colorado	10th SFG
Stuttgart, Germany	1st Battalion, 10th SFG
Okinawa, Japan	1st Battalion, 1st SFG
Ft. Benning, Georgia	75th Ranger Regiment
Ft. Benning, Georgia	3rd Battalion, 75th Ranger Regiment
Ft. Bragg, North Carolina	SWCS

²² We considered THOR³ headquarters staff functions according to our discussions with the staff about the functions they perform. There are currently no standard operating procedures for THOR³ as there are for TAP.

ing to program coordinators). Additionally, coordinators indicated that there is little management oversight from THOR³ headquarters and that they run their programs effectively with their small teams.

That said, structural and resource constraints hinder improved performance. Program coordinators uniformly expressed frustration with the inadequate structure (authorizations) and low staffing totals. For example, USASOC personnel requests for the 3rd SFG indicated the need for a program coordinator and eight strength and conditioning coaches, but the group had one program coordinator and only two coaches when the RAND study team visited in November 2011. These staffing levels limit the program's ability to reach as many soldiers as desirable, though we do not have any indication that program coordinators are turning soldiers away.²³ Moreover, strength and conditioning coaches reported working excessive hours to meet program demands. Collectively, then, this suggests that program structure and staffing may be inadequate, but the extent of this inadequacy is hard to determine. Finally, we note that the program is, in fact, scheduled to grow substantially. Table 2.4 shows THOR³'s planned program structure growth, from 48 personnel at the time of this research to 234 personnel, according on SOCOM staffing ratios adapted by USASOC (1:300 human performance program coordinators to SOF soldiers, 1:300 for physical therapists, 1:1,000 for performance dietitians, and 1:500 for cognitive enhancement specialists).²⁴ How this will address the current structure and staffing challenges is not clear; there are no data that permit a complete analysis. To facilitate such an analysis, USASOC should consider systematically collecting usage data over time to establish fact-based THOR³ program office and headquarters staffing requirements.

Although we could not conduct a comprehensive manpower analysis within the scope of our study, comparisons with similar programs provide a useful point of comparison. In particular, TAP currently has a larger and more diverse and specialized headquarters element.²⁵ The program represents a merger of two traditional models: (1) the professional sports medicine model, designed to identify, diagnose, and treat injured individuals and return them to full duty, and (2) the human performance model, designed to enhance the physical performance of healthy individuals. Two key positions in the TAP headquarters office that are not represented on the current THOR³ headquarters staff are sports medicine director and human performance director. These two billets provide TAP with the technical ability to oversee subordinate teams at O-6-level commands.²⁶ TAP also has dual lines of supervision to the medical and training elements of Naval Special Warfare Command. These two billets provide connectivity to these two supervisory elements. In addition, TAP provides an orthopedic surgeon consultant to each unit program through memoranda of agreement with the local MTFs.²⁷ These consultants provide medical guidance and assistance to TAP staff and sailor-athletes. These positions are described in Table 2.5. This arrangement permits better technical super-

²³ We also note that because THOR³ is a new program, the number of soldiers taking advantage of it could increase over time.

²⁴ Discussions with USASOC staff, March 2012.

²⁵ See Naval Special Warfare Command, *Naval Special Warfare Tactical Athlete Program (TAP)*, San Diego, Calif., November 2009. Our observations about TAP are based on this document and interviews with TAP providers. Note that this detailed administrative instruction provides useful command guidance; THOR³ has no similar documentation yet.

²⁶ THOR³ plans include hiring human performance, physical therapist, and dietitian technical experts (though not a cognitive enhancement specialist) for the headquarters staff.

²⁷ TAP program instructions and interviews with TAP personnel, February 2012.

**Table 2.4
THOR³ Planned Program Structure**

THOR ³ Program	Contract Employees						Army Civilian	Military	Total
	Data Analyst	Strength and Conditioning Coach	Physical Therapist	Performance Dietitian	Cognitive Enhancement Specialist				
USASOC Headquarters	1	1	1	1	1	1	1	7	
SWCS Headquarters	1	10	6	2	2	1		22	
U.S. Army Special Forces Command (USASFC) (Airborne)									
1st SFG	1	7	4	1	1	1	1	16	
1st Battalion, 1st SFG		2	1	1		2		6	
3rd SFG	1	8	4	1	1	1	1	17	
5th SFG	1	8	4	1	1	2	1	18	
7th SFG	1	8	4	1	1	1	1	17	
10th SFG	1	7	4	1	1	1	1	16	
1st Battalion, 10th SFG		2	1	1		2		6	
75th Ranger Regiment									
RHQ/75th Ranger Regiment	1	1	1	1	1	2		7	
1st Battalion, 75th Ranger Regiment		3	1	1	1			6	
2nd Battalion, 75th Ranger Regiment		3	1	1	1			6	
3rd Battalion, 75th Ranger Regiment		3	1	1	1			6	
U.S. Army Special Operations Aviation Command									
160th SOAR Headquarters	1	2	1	1	1	1	1	8	
1st Battalion, 160th SOAR		2	1					3	

Table 2.4—Continued

THOR ³ Program	Contract Employees						Army Civilian	Military	Total
	Data Analyst	Strength and Conditioning Coach	Physical Therapist	Performance Dietitian	Cognitive Enhancement Specialist				
2nd Battalion, 160th SOAR		2	1					3	
3rd Battalion, 160th SOAR		2	1	1	1			5	
4th Battalion, 160th SOAR		2	1	1	1			5	
U.S. Army Military Information Support Operation Command Headquarters	1	5	4	1	1			12	
95th Civil Affairs Brigade Headquarters	1	5	3	1	1			11	
528th Sustainment Brigade/112th Special Operations Signal Battalion Headquarters	1	3	3	1				8	
ACE									
ACE I	1	4	3	2	2		1	12	
ACE II	1	6	3	3	2		1	15	
Total	14	96	54	25	21	15	9	234	

NOTE: The nine military personnel are physical therapists; four of the Army civilians are rehabilitation coordinators (physical therapists), ten are program coordinators, and one is a program administrator in USASOC Headquarters.

Table 2.5
Naval Special Warfare Command TAP Positions at the Program Headquarters Level

Position	Description
Sports medicine director	Advises subordinate command managers on injury prevention, sports medicine, rehabilitation, human performance, and sustainment; advises on staffing and collaboration with clinics and MTFs; facilitates and disseminates research findings; M.S. or Ph.D. preferred
Human performance director	Advises subordinate command managers on human performance and staffing, equipment, and fiscal issues; develops and manages TAP database; M.S. or Ph.D. preferred
Orthopedic surgery consultant	Advises TAP directors on musculoskeletal research and outcomes and advises on matters related to quality of care in supporting facilities; board-certified in orthopedic surgery; M.D., with sports medicine experience required

vision of subordinate TAP programs at Naval Special Warfare Command groups. ACE I has similar arrangements for an orthopedic surgeon to provide support, as well as a similar dual reporting chain.²⁸ By comparison, the THOR³ program lacked the structural basis to perform similar functions as of this writing, though its planned expansion, if approved, would give it significantly greater capability to provide technical oversight.

Also shown in Table 2.5, the TAP sports medicine director at the program headquarters level serves as an adviser to all component managers and is responsible for developing and leading initiatives on the maintenance, improvement, and uniformity of the program across the force. These initiatives include, for example, injury prevention, sports medicine, rehabilitation, human performance, sustainment, and interaction between medical facilities and program elements and participants. The sports medicine director also facilitates research efforts in these fields, disseminating research results throughout Naval Special Warfare Command. Notably, three of our interviewees at THOR³ sites spoke of an inability to obtain, through formal channels, the latest research in their fields, but they did report participating in informal discussions by email and semiannual THOR³ workshops for program coordinators.²⁹

The TAP human performance director collaborates directly with the sports medicine director on all TAP matters across the force. The human performance director facilitates and provides oversight for criteria-based position descriptions, statements of work, and performance standards and training for all TAP staff and ensures that workload data from across the program are collected and reported.

TAP orthopedic surgery consultants are considered subject-matter experts in the evaluation and treatment of musculoskeletal injuries and, as such, provide advice on all matters related to injury prevention, sports medicine, and rehabilitation, including facilities, equipment, provision of care, and research. They serve to enable accelerated access to care through frequent field visits to subordinate elements with the goals of minimizing lost training time, reducing attrition from units, and accelerating return to duty. They also facilitate, directly or through the advice they give to the core TAP staff, expert musculoskeletal care.

²⁸ Interview with ACE I human performance and rehabilitation staff, March 2012. Orthopedic surgeons visit the unit medical facilities approximately once a week. The ACE I program also has a dual reporting chain through the medical and training elements of the command.

²⁹ Discussions with THOR³ headquarters staff, March 2012.

Findings and Recommendations

In this section, we present recommendations in two specific categories: setting and articulating requirements and structure.

Requirements Validation and Articulation

THOR³ program staff should clearly and carefully validate and articulate requirements to assist the headquarters office in effectively administering the program and in ways that are meaningful at the unit level. This should go beyond simple ratios of staff to supported population; THOR³ program staff should ensure that program coordinators and other staff understand the how these requirements relate to all personnel.

Headquarters requirements should be tied to the USASOC leadership's expectation for THOR³ and the implied role of the office. Requirements should specify, for example, the level of decentralization for THOR³ and how best practices are to be shared across the command. The current THOR³ headquarters staff is adequate only if its role is very modest (e.g., performing routine administrative tasks and coordinating the program). If the USASOC leadership wants the THOR³ headquarters office to have a substantive oversight role or provide cross-USASOC management in any significant way (e.g., assessment of unit-level programs, advice or direction on technical matters), then it should be staffed to do so. Of note, USASOC's request for staff under the POTF2 program includes a THOR³ headquarters office of six personnel:

- a program manager (Army civilian)
- subject-matter experts in strength and conditioning, physical therapy, and dietetics (Army civilians)
- an administrative specialist (Army civilian)
- a data manager (contractor).³⁰

This structure is likely adequate, with the possible exception of oversight for cognitive enhancement. If the qualification requirements for the program manager or one of the subject-matter experts include knowledge of and experience supervising a broad high-level sports staff, then this would be adequate. If not, a cognitive enhancement expert should be added.

*At the unit level, the need for well-defined requirements is most evident with respect to cognitive enhancement specialists.*³¹ There is a significant difference between the THOR³ headquarters office staffing plan and the perceived need for cognitive enhancement specialists at the unit level, leading to one of two conclusions. First, it may be that the staffing plan is simply not correct (i.e., there is almost no need for cognitive enhancement specialists), so requirements need to be changed to reflect this. However, the staffing plans seem to align

³⁰ USASOC POTF2 submission, emailed to the RAND study team, March 2012; discussions with USASOC staff, April 2012.

³¹ POTF2 requirements are, by all accounts, larger than what the program coordinators indicated they need, though not significantly for all specialties (see Table 3.1 in Chapter Three for details). However, for cognitive enhancement specialists, the differences are significant, with USSOCOM allocation ratios and USASOC requests calling for four times as many cognitive enhancement specialists (38) as program coordinators indicated they would need (9).

with USSOCOM guidance,³² the Army's approach to mental preparedness (i.e., the cognitive enhancement elements of the Army's comprehensive soldier fitness program),³³ and the practice in high-level sports of having sports psychologists on staff. Furthermore, within USASOC, SOCEP seems to have defined the role of cognitive enhancement well, and its experiences with other units at Fort Bragg indicate that well-designed and -administered programs produce positive outcomes.³⁴ If so, this implies that a second possibility is more likely: that program coordinators, though experts in strength and conditioning, do not fully understand the benefit of having cognitive enhancement specialists on staff. We believe that this is the more likely case, and we address it in greater detail in Chapter Four. However, in either case, a well-articulated and validated requirement would establish—and help program coordinators better understand—the need for all authorized positions on their staffs.

USSOCOM-recommended staffing requirements are much larger than what is currently available and what the program coordinators say they need, leading to questions about the applicability of the USSOCOM guidance to USASOC. A detailed analysis of this disparity was not conducted as part of this analysis, but a few facts are germane. First, THOR³ is a young program, and participation across USASOC is not nearly universal. Additionally, the program coordinators reported that they spend very long hours serving their current clients and do not have enough time to devote to individuals or teams. As such, it is clear that significant growth is needed to provide the coaching and rehabilitation staff needed to optimize soldier performance. Furthermore, the lack of data on contact hours, number of soldiers served, and other pertinent factors indicates that a well-planned workforce analysis would help USASOC improve THOR³ staffing plans. However, because certain services are not yet provided by THOR³, any workforce analysis would require a follow-up study as the program matures and more data become available.

In addition to these benefits, well-articulated requirements would establish a strong, enduring basis for advertising (and hiring) for THOR³ staff. Moreover, with respect to cognitive enhancement specialists, better-defined requirements would also clearly delineate unit- and soldier-level needs in this relatively new field and thus help set program goals and operationalize the means to fill those needs (e.g., contractor, Army civilian).

Next, firm requirements for manpower would provide the basis for assessing the personnel aspect of THOR³. A unit status report (USR)-like assessment following standard practice for personnel would be a useful metric for the program's potential to provide the services needed by USASOC soldiers. However, for this assessment to adequately reflect the status of the program, requirements for THOR³ personnel should be based on a manpower analysis.

Finally, if the difference between perceived manpower needs and staffing plans is, in fact, a case of program coordinators not fully understanding the need for cognitive enhancement specialists, then a formal effort to understand staff requirements in terms of functions and numbers would serve another need as well: It would help stipulate what THOR³ program coordinators need to know and do to properly supervise their entire staff rather than just the part that aligns with their specialties. This would help THOR³ better frame job requirements

³² USSOCOM guidance on ratios of staff to clients was changed in early 2012 at the POTF2 conference. While these ratios have yet to be formally codified, they are being used in working documents between USASOC and USSOCOM.

³³ Discussions with CEP cognitive enhancement specialists, March 2012.

³⁴ Experiences with some XVIII Airborne Corps units and SWCS classes indicate positive outcomes, according to interviews with SOCEP personnel at Ft. Bragg, March 2012.

and descriptions for program coordinators and would provide important input for a formal manpower analysis. It would also help indicate whether the grade requirement for the program coordinators is adequate.

Requirements must be periodically reviewed and updated. Developments in the state of the art for each of these four specialties will have an effect on how THOR³ delivers services to USASOC soldiers, and changes in the goals for the three functional areas may change the requirements for the four specialty areas. Furthermore, either of these types of changes could affect leader development and education for THOR³ staff (as discussed in greater detail in Chapter Four).

There is a related question not yet addressed: whether THOR³ staff should be Army civilians or contractors. We return to this question in Chapter Three but note here that this also could be seen as an element of requirements.

Structure

A comprehensive discussion of structure cannot be undertaken until requirements have first been articulated and then validated, but we can draw some tentative conclusions at this point.

The THOR³ headquarters office is understructured for all but the most minimal functions and should be expanded as planned if the USASOC leadership expects it to provide direction and oversight of the program. By its own assessment and those of its supported organizations (i.e., in the view of unit-level program coordinators), and compared with an organization with a comparable purpose (TAP), THOR³ cannot perform all the necessary functions to be fully effective. We categorize these functions as administrative and functional.

From an administrative perspective, a number of important functions are either not being performed at all or not being performed well (e.g., assessments of unit-level programs). Other administrative functions, such as the processing of personnel and support actions, were not examined in detail, but THOR³ staff indicated that the headquarters office struggles to accomplish them because of manpower shortages. Furthermore, the headquarters office is currently able to accomplish the administrative functions it does perform only because it has a third staff member who is not authorized (i.e., borrowed military manpower). Without this third person, it seems unlikely that THOR³ headquarters would be able to perform the minimal essential administrative tasks necessary for the program to function.

From a functional perspective, there is currently no requirement for the program's headquarters staff to (1) provide technical oversight of the unit-level programs, including conducting regular visits and interacting with unit-level program staff; (2) collect and disseminate best practices and lessons learned from the individual unit-level programs; (3) identify and make available updates on technical subjects, such as advances in the state of the art in any of the four THOR³ specialties; or (4) provide any other technical support or oversight to the unit-level programs. While it is theoretically possible for each THOR³ unit-level program staff to find ways to meet these needs (e.g., sharing insights and best practices without central coordination), in practice, this will probably not be an effective approach unless the headquarters office obtains additional staffing to help with these or other roles.

Likewise, our interviewees agreed that THOR³ program offices are understructured (and understaffed). Plans were in place to remedy this beginning in FY 2012, and requests to further expand the staff in a way that is more in line with (but still short of) SOCOM staffing guidance have been submitted for approval. Whether these plans to increase staffing are adequate cannot be determined without a formal manpower analysis.

We recommend a thorough manpower analysis to forecast expected workloads and better inform structure and staffing requirements. Moreover, we note that because unit-level program coordinators do not fully appreciate the roles played by cognitive enhancement specialists, units do not understand the potential contributions of these experts, and because these functions are not fully deployed, additional analysis beyond a workforce analysis will be needed to determine these requirements as understanding of and participation in THOR³ increases.

The Army's own manpower analysis capabilities—the U.S. Army Manpower Analysis Agency (USAMAA) at Fort Belvoir, Virginia—can help USASOC ensure the validity of THOR³ organizational requirements and its long-term ability to fulfill them. USAMAA's mission, under the 570 series of Army Manpower Regulations, is to validate the manpower analysis portion of all concept plans while simultaneously educating and training organizational representatives in manpower analysis and manpower requirements determination.³⁵ A formal Army manpower analysis should be viewed by USASOC as an essential element of properly structuring and staffing the THOR³ program. Such a study can, in turn, help set an empirical foundation for the achievement of most, if not all, of the recommendations noted here.

³⁵ USAMAA also conducts training for organizational representatives twice a year at Fort Belvoir and on-site as requested. See U.S. Army Manpower Analysis Agency, "USMAA Vision, Mission, and Functions," web page, last updated May 5, 2011.

Personnel

In this chapter, we examine current and future staffing for the THOR³ program in light of the organizational needs just discussed, as well as associated personnel management issues. In particular, we look at the pros and cons of staffing THOR³ with Army civilians versus contract employees. This chapter builds off of the foundation set in the last chapter and focuses on three specific topics: the best staffing mix of Army civilians, contractors, and military personnel; whether current position descriptions will yield program coordinators who can adequately manage the unit-level programs; and issues related to hiring the right personnel. We also provide several conclusions and recommended improvements for the mid- to longer terms.

THOR³ Current and Future Staffing

In this section, we examine whether the staffing mix of Army civilians and contractors that THOR³ has requested will be adequate in terms of numbers and hiring categories.

Because THOR³ is a relatively new program on a growth path that will run through 2017, it was necessarily understaffed at the time of this research. In support of this conclusion, the ten program coordinators and three physical therapists whom we interviewed uniformly perceived THOR³ staffing as inadequate. The program coordinators also expressed a strong preference for Army civilians rather than contractors to fill their teams, something not currently envisioned by staffing plans. As noted in Chapter Two, staffing for the THOR³ headquarters office is also inadequate, given that it is currently working to capacity on the limited set of tasks it currently performs—and it can perform that set of tasks only because its staff includes a soldier on loan from the MTF. Table 3.1 provides an overview of THOR³ staffing. For the ten units that we examined, the table compares the current THOR³ staff, its requested staffing levels, and the recommendations of the unit program coordinators interviewed for this study. It illustrates the significant growth that will take place in the program and highlights distinctions between requested staffing levels and program coordinators' views on what is needed.

The program's requested staffing levels seem adequate and, with the exception of cognitive enhancement specialists, not far out of line in terms of numbers with the recommendations of the THOR³ program coordinators. The requested staffing levels are based on slightly modified metrics provided by USSOCOM (see Table 2.4 in Chapter Two). Those levels, in turn, are based on experience with programs that have been in place longer than THOR³, particularly Naval Special Warfare Command's TAP.

To the extent that the THOR³ staffing request and program coordinator estimates diverge, they do so most widely with respect to the desire for Army civilian employees over contractors

Table 3.1
Staffing Comparison for Ten Programs

Staff Type	THOR ³ Program Staffing Level		Program Coordinator Estimate
	Current	Requested	
Strength and conditioning coaches			
Contractor	13	96	3
Army civilian	9	10	41
Military	0	0	0
Total	11	67	40
Physical therapists			
Contractor	6	54	7
Army civilian	5	4	15
Military	0	9	18
Total	11	67	40
Performance dietitians			
Contractor	5	25	0
Army civilian	0	0	13
Military	0	0	0
Total	5	25	13
Cognitive enhancement specialists			
Contractor	1	21	1
Army civilian	0	0	7
Military	0	0	0
Total	1	21	8
Administrative staff			
Contractor	0	14	0
Army civilian	0	1	5
Military	0	0	1
Total	0	15	6

SOURCE: POTF2 THOR³ projections and interviews with program coordinators and THOR³ headquarters personnel.

NOTE: Current staffing level was provided by USASOC, with updates when new staff were hired. See Table 2.4 in Chapter Two ("THOR³ Program" row) for the ten programs from which the RAND team interviewed program coordinators. The table shows the total number, followed by the number of contractors, the number of Army civilians, and the number of military personnel.

and the need for cognitive enhancement specialists. We address the first of these differences here, and we address the need for cognitive enhancement specialists in Chapter Four. It should be noted that our interviewees' assessments were not based on a formal manpower analysis (which, as noted in Chapter Two, would be beneficial) or projections for program growth, nor were they tied to ratios of THOR³ personnel per soldier served (as employed by USASOC in the course of its own planning and programming for THOR³ staffing). Rather, these assessments were based on program coordinators' judgment of need based on their current workload and their understanding of the roles that each staff specialist would play.¹

As noted earlier, the program coordinators expressed a general—and, in some cases, fairly strong—aversion to staffing with contractors, particularly in large numbers. The THOR³ headquarters office seconded this preference. However, Army civilian and contract personnel each have pros and cons. For example, using civilians would permit USASOC to hire a permanent staff able to establish long-term provider-client relationships with USASOC soldiers. Furthermore, in some specialties, it would be desirable for the THOR³ staff to develop an understanding of USASOC soldiers' and their units' unique needs (e.g., strength and conditioning training for a 40-year-old ODA [operational detachment–alpha] team sergeant is different from similar training for a young professional athlete). Developing this understanding and these relationships takes time, arguing for the more permanent staffing option provided by Army civilians.

However, using contract staff provides flexibility that civilian staff do not. Of particular note for USASOC is the fact that the number of clients at some units may fluctuate significantly due to frequent deployments, which has implications for THOR³ staffing needs. Moreover, it is not clear that the importance of understanding and developing relationships with USASOC soldiers is a requirement for each person on a team, or for each specialty to the same degree. For example, if some strength and conditioning coaches were permanently employed Army civilians, they might better understand the needs of the soldiers and leaders in a unit and could help design training that other, nonpermanent staff would help conduct. In addition, experience with contractors in the cognitive component of the Army's comprehensive soldier fitness program was relatively positive, as it has been for other elements of the ACE I human performance and rehabilitation staff.² Feedback from that program also indicates that using contractor employees provides greater flexibility to remove those who are not performing up to standard, according to staff interviewed. Finally, contracts provide units with the flexibility to bring in staff for special, temporary needs. For example, one similar program brought in additional dietitians with strong culinary backgrounds to train the unit's dining facility on menu selection and food preparation—a one-time, potentially high-payoff effort.

In summary, there are pros and cons to using either Army civilian and contract staff that vary across individual units, depending on the required degree of staffing flexibility given their exercise and deployment cycles, the specialty of the program staff, and the preferences of commanders and THOR³ supervisors regarding whether to prioritize permanence or flexibility.

¹ Coordinators carefully considered this issue in advance of their interviews and were clear and direct in the course of providing their rationale for staffing. On this basis alone, program coordinators' assessments warrant serious consideration. Furthermore, it would be useful to compare these results with those stemming from a formal manpower analysis (conducted either in cooperation with USAMAA or independently by USASOC).

² Interviews with two Army officials involved in setting up the cognitive enhancement element of the Army's comprehensive soldier fitness program, including hiring and training staff, and interviews with ACE I personnel, March 2012.

Detailed analysis of each of these factors in the specific context of each USASOC O-6–level command type is a prerequisite to providing hard recommendations, as are insights into the command's preference for permanence or flexibility.

Despite these caveats, the following conclusions seem clear:

- A mix of Army civilian and contract staff probably makes sense in most THOR³ unit-level programs. This would provide USASOC with the ability to manage demand and personnel costs while providing a permanent staff presence.
- Given that the THOR³ headquarters office expressed a preference for permanency over flexibility, having at least one permanent staff member in each specialty would provide the ability to develop a long-term understanding of units and the needs of unit personnel, develop training or rehabilitation programs based on this understanding and working relationships with the command's staff, and allow greater permanency in the program.

Management of THOR³ Program Staff

The current position descriptions and vacancy announcements for the human performance program coordinators (for the unit-level programs) are inadequate from a management perspective. They do not specify that applicants should have experience supervising teams of any sort, particularly not the multidisciplinary teams of moderate scale that the THOR³ program will have when fully fielded.³ While the technical qualifications in the strength and conditioning field are well defined in both the position description and vacancy announcements, there is no basis for hiring personnel with experience managing multidisciplinary coaching and rehabilitation staffs (nor does the position description specify a requirement for experience in professional sports). When these staffs grow to as many as 30 members in more than one location, as is currently planned for some of the unit-level programs, the management challenges will differ significantly from those involved in managing the small (three- to five-person) professional staffs currently in place. The current position descriptions and vacancy announcements do not provide adequate descriptions of this requirement.

Given that the current program coordinators are on board, formal management training for program coordinators may be warranted. This could be part of the leader development and education of these managers, discussed in detail in Chapter Four.

Hiring and Retention

The THOR³ program is slated to hire large numbers of new staff into both government service and contract billets on an ambitious timeline through FY 2017. As currently structured, these staff will be in the GS-0600 series (0601, Human Performance/Strength and Conditioning; 0633, Physical Therapy; and 0630, Performance Dietitian), as well as the GS-0180 series (Psychologist), hired as government employees and through contracts. We first examine the

³ Position description DL331429, Human Performance Program Coordinator, YH-0601-02, September 8, 2009 (provided by USASOC THOR³ headquarters).

challenges involved in hiring human performance program coordinators. We then address hiring in a more general context.

Hiring Human Performance Program Coordinators

USASOC's efforts to hire human performance program coordinators under GS-0601, General Health Science Series, have been challenging, according to USASOC staff.⁴ These staff indicated that USASOC, USSOCOM, and Naval Special Warfare Command have had difficulty hiring in the right people through the civilian personnel hiring process because the candidates selected by the U.S. Office of Personnel Management (OPM) hiring system often did not have advanced degrees in appropriate fields or experience in high-level sports as the hiring units demanded. Further, THOR³ staff believed that the GS-0601 position code does not permit them to adequately differentiate between job applicants with the basic technical skills required to be a strength and conditioning coach and those with the advanced technical skills, higher levels of education, and extensive experience in high-level sports that THOR³ positions require.

The hiring challenges that USASOC has experienced point to one or more of three problems. First, as noted earlier, the GS-0601 series does not permit the adequate specification of the requirements for the job. If this is true, then the OPM-managed screening process will not be able to rank applicants in a way that meets USASOC's needs. Second, the OPM-managed hiring process does not provide the fidelity needed to select the best-qualified individuals, despite an adequately specified job series. Third, there are administrative problems in the Army, DoD, or OPM personnel systems that prevent the system from working as designed.

For the first two potential problems, the answer hinges on whether the GS-0601 series permits the specification of criteria that would provide adequate screening of candidates and whether the routine hiring of personnel for these positions (human performance program coordinator and strength and conditioning coach) would be best served by either.

With regard to whether the GS-0601 series would permit the hiring of personnel with the right qualifications, the answer seems to be a qualified "yes," based on the desire for advanced degrees and the skills that are unique to experience in high-level athletics. An examination of program coordinator position descriptions indicated that these descriptions do not include the sports-specific requirements, nor do they indicate the need for advanced schooling in exercise physiology or related fields, competencies that USASOC believes are important.⁵ Yet, the GS-0601 series does permit education level as a criterion for screening, even though that is not currently included in the position description.⁶ Experience can also be presented as a qualification. However, if the specific skills that come from experience in high-level athletics were articulated and placed in the job requirements, it would improve the ability to screen out

⁴ Interviews with USASOC staff, April 2012.

⁵ Position description DL331429, Human Performance Program Coordinator, YH-0601-02, September 8, 2009 (provided by USASOC THOR³ headquarters). Email exchange with THOR³ staff, March 2012, and discussions in April 2012. This problem is peculiar to the human performance coordinators and strength and conditioning coaches under the GS-0601 series, according to THOR³ headquarters officials. Similar problems have not been reported for physical therapists, and the billets for the other two specialties do not currently have Army civilians.

⁶ See U.S. Office of Personnel Management, *Handbook of Occupational Groups and Families*, Washington, D.C., May 2009, p. 54; and U.S. Office of Personnel Management, "Standards: General Health Science Series, 0601," undated.

unqualified applicants. These skills can be determined by a thorough job analysis and outlined in the position description.⁷

However, GS-0601 is a general or “catchall” health category that permits the government to hire for positions, such as strength and conditioning coaches, that do not fall into more well-defined categories, unlike physical therapist positions. As such, it is incumbent on the hiring organization to adequately specify job requirements. Whether it can do this well depends on human resources staff competency in USASOC and throughout the series of offices that must develop staff position descriptions and vacancy announcements. Changes in job descriptions or vacancy announcements during staffing that deviate from job analysis stipulations could lessen the chance of good applicants being presented and selected and, perhaps more importantly, bad applicants being screened out. This creates challenges.

Because the GS-0601 series is a catchall category for health specialties, and because USASOC has had challenges getting the personnel it believes are qualified, this raises the question of whether a new job series for human performance program coordinators (and, at a more junior level, strength and conditioning coaches) is needed. Across all special units (e.g., USASOC and other USASOC operational units), DoD seeks to maintain a staff of perhaps as many as a few hundred personnel with these skills, so having a specific job series that is designed to meet the needs of THOR³ (and other USSOCOM organizations) may make sense. Developing this job category would require essentially the same process as adequately categorizing it under GS-0601—that is, a detailed job analysis—but it would provide permanent criteria against which to advertise positions and assess candidates. This would simplify the hiring process and provide OPM with criteria to rank applicants that are more in line with these special organizations’ needs. Furthermore, if this specialty is seen as critical, then there is an argument for placing it on the same level of professional recognition as other specialties under the GS-0600 category.

Creating a job category specific to THOR³’s needs would significantly mitigate the second potential problem: the apparent inability of the OPM-managed hiring process to identify the best-qualified candidates. If this does not happen, another potential solution would be for USASOC or USSOCOM to request direct hiring authority from OPM. Direct hiring authority permits the agency in question to fill positions with the staff it feels are best qualified, regardless of formal criteria or competitive hiring requirements. Arguably, this authority would permit USASOC and THOR³ personnel to select the applicants who best meet their needs. However, the criteria for granting direct hire authority are strict, and exceptions are narrow.⁸ OPM can provide direct hire authority if it determines that there is a “severe shortage of candidates” or a “critical hiring need.”⁹ It does not appear that USASOC’s need for program coor-

⁷ See U.S. Office of Personnel Management, *Delegated Examining Operations Handbook: A Guide for Federal Agency Examining Offices*, Washington, D.C., May 2007, Chapter Two, Section B.

⁸ See U.S. Office of Personnel Management, 2007, Chapter Two, Section A.

⁹ These terms are defined in U.S. Office of Personnel Management, 2007, Chapter Two, Section A, as follows:

Definition of severe shortage of candidates: A severe shortage of candidates for a particular position or group of positions means that an agency having difficulty identifying candidates possessing the competencies or the knowledge, skills, and abilities required to perform the job requirements despite extensive recruitment, extended announcement periods, and the use, as applicable, of hiring flexibilities such as recruitment or relocation incentives or special rates.

Definition of critical hiring need: A critical hiring need for a particular position or group of positions means that an agency has a need to fill the position(s) to meet mission requirements brought about by circumstances such as, but not limited to, a

dinators and strength and conditioning coaches fulfills these criteria. If USASOC determined that its needs did meet these criteria, it would need to seek such authority through DoD. DoD would have to submit a request “by the agency’s Chief Human Capital Officer (or equivalent) at the agency headquarters level to OPM identifying the position(s) for which it believes a severe shortage or a critical hiring need exists. The agency must include relevant evidence to support its request.”¹⁰ This might require a long staffing process through USSOCOM (or the Army) to DoD, and from there to OPM for approval. If OPM were to grant this approval, it would be to DoD, which, in turn, would have to delegate it down the chain to USASOC. While direct hiring authority would undoubtedly make hiring easier, it seems unlikely that a request for it would succeed.

As for the third of these problems, administrative issues in the Army, DoD, or OPM personnel systems that are preventing the system from working as designed, there are unfortunately no simple solutions. If general lessons from large bureaucracies are any indication, this is almost certainly a contributing factor to some of the hiring challenges that USASOC has experienced, either because the position descriptions are not adequately categorized or because there is no specific position category for human performance program coordinators or strength and conditioning coaches. However, the very challenges in making the U.S. government’s human resources system more responsive to specific client needs seem to argue for a more carefully and usefully defined job series, which would reduce bureaucratic friction.

Hiring in All Other THOR³ Specialties

Of the other three specialties needed by THOR³, feedback from the headquarters office indicates that the requirements for physical therapists and dietitians are well understood. And while the program is currently hiring only contract dietitians, filling physical therapy positions with qualified Army civilians does not seem to be a problem. However, cognitive enhancement is less well understood by the THOR³ program coordinators, as is evident from their perspective on demand for these specialists. These positions may also require carefully crafted job descriptions should Army civilians be hired to fill them.

Despite the underestimation by program coordinators for cognitive enhancement specialists, cognitive enhancement is a well-developed field. As noted in Chapter Two, the Army has embraced it as an important component of its comprehensive soldier fitness program, and USASOC has a well-developed program for teaching cognitive enhancement in SWCS. Much of the intellectual background for the Army’s adoption of cognitive enhancement comes from CEP at West Point,¹¹ which helped develop the Army’s approach to comprehensive soldier fitness.¹² CEP staff also helped establish USASOC’s SOCEP. Currently, USASOC plans are for all cognitive enhancement specialists to be contractors, but, as discussed earlier, there are advantages to having some Army civilians in these billets. Should USASOC hire Army civilians for these billets, it is likely that existing OPM government service categories would suffice (e.g., GS-0180, Psychologist Series). However, these staff would require training on the

national emergency; threat; potential threat; environmental disaster; or unanticipated or unusual event or mission requirement; or to conform to the requirements of law, a Presidential directive, or Administration initiative.

¹⁰ U.S. Office of Personnel Management, 2007.

¹¹ See Center for Enhanced Performance, undated.

¹² Discussions with West Point CEP staff, February and March 2012.

SOCEP approach (if it is to be used across USASOC) and how to apply cognitive enhancement in unit-specific settings.

Labor Market Considerations

Turning next to the labor market for each of these specialties, the hiring outlook for all three GS-series positions under consideration is strong (i.e., all but cognitive enhancement specialists), although USASOC should expect stiff competition for the very best in these specialties.

For exercise physiologists (the title under which strength and conditioning often appears), the overall job outlook for practitioners is particularly strong.¹³ Growth of employment opportunities is expected to continue to be stronger than average (14 percent for all occupations), according to the U.S. Department of Labor's Bureau of Labor Statistics (BLS), with a roughly 24-percent growth in employment to 2020. However, the part-time nature of many such positions often leads certified fitness specialists to work part-time at a number of facilities. The Army civilian option for hiring could thus pose a distinct advantage for the government because these jobs would be attractive to applicants looking for stability and a reliable salary. (Several interviewees indicated as much with respect to their own choice for a government service position.) However, if positions are contracted out, the lure of other or additional work could create rapid turnover or instability in the workforce unless provisions disallowing outside part-time work are written into contracts. This is an important factor for USASOC to consider.

For physical therapists, employment opportunities are expected to grow much faster than average, according to BLS—about 39 percent by FY 2020.¹⁴ Perhaps most important of all, changes to restrictions in insurers' reimbursements to providers will increase access to and demand for physical therapy services for many Americans. The increasing population of elderly, along with advances in medical technology that lengthen life (and improve quality of life) for the seriously ill and injured, are also expected to drive demand and wages for licensed physical therapists upward, according to BLS. (Median salaries were over \$80,000 at the time of this research, with the highest 10 percent paid well into six figures.) This, too, is an issue for USASOC to consider. However, the cost estimates for staff, provided to RAND for this study, indicate that USASOC has considered cost competitiveness. That said, given the projected growing demand for physical therapists, hiring and retention incentives for this specialty might be considered.

Dietitians should see above-average employment growth (and wage compression), according to BLS, though not as rapid as for the first two specialties. Employment for dietitians is expected to increase by about 20 percent through 2020, above the national average for employment growth across occupations.¹⁵ However, given the modest salaries for dietitians (median pay is slightly above \$53,000 per year, according to BLS), USASOC should have less trouble filling positions with high-quality dietitians at competitive salaries. In turn, USASOC cost estimates may have overstated salary requirements for dietitians. Likewise, retention for this specialty should be less problematic, according to projected labor market trends.

¹³ U.S. Department of Labor, Bureau of Labor Statistics, "Summary: Fitness Trainers and Instructors," *Occupational Outlook Handbook, 2012–2013*, April 26, 2012c.

¹⁴ U.S. Department of Labor, Bureau of Labor Statistics, "Summary: Physical Therapists," *Occupational Outlook Handbook, 2012–2013*, April 6, 2012b.

¹⁵ U.S. Department of Labor, Bureau of Labor Statistics, "Summary: Dietitians and Nutritionists," *Occupational Outlook Handbook, 2012–2013*, July 18, 2012d.

Limited data are available on cognitive enhancement specialists, and there is no government job series specifically geared toward this specialty. However, under the larger heading of psychology, the demand for labor in this field is expected to grow more quickly than the national average, according to BLS.¹⁶ Employment growth is expected to vary by subspecialty (e.g., 22-percent growth for clinical specialties, 35-percent growth for industrial-organizational specialties). The number of colleges offering accredited, degree-awarding programs in sports psychology—a proxy for cognitive enhancement—remains relatively small.¹⁷ This indicates that USASOC may need to plan for challenges in attracting and retaining top-quality talent for the cognitive enhancement specialist function.

Findings and Recommendations

This examination of selected personnel issues led to a few clear conclusions and recommendations.

The total number of personnel that THOR³ has requested appears adequate, according to both USSOCOM's allocation rules and the collected input of program coordinators. Any decrease in this number could cause challenges, particularly if more soldiers subscribe to the program.

Each specialty area in each supported O-6-level unit should have at least one Army civilian. This would foster a deeper understanding of the supported unit's soldiers and their needs and would provide greater stability in these specialties. Nonetheless, any firm decisions about the mix of Army civilians and contractors on THOR³ unit-level teams will depend on the unit's OPTEMPO and the command's preferences for stability and flexibility. A mix of permanent and contract staff would provide USASOC with the ability to manage demand and personnel costs while providing a permanent staff presence.

THOR³ should have a personnel services contract that permits it to hire additional specialists. Such a contract should allow the program to hire additional staff in any of the four categories to accommodate fluctuations in demand, as well as special and temporary training or other needs.

USASOC should work with USSOCOM to perform a detailed job analysis of program coordinator and strength and conditioning coach positions to better categorize requirements under GS-0601 in the short term, and it should pursue a new job series in the long term. If USASOC decides to pursue a new job category, its chances of success would be much greater if USSOCOM were to conduct a job analysis across all similar programs in the command. The numbers of personnel who would fall under this job category would be much greater, giving USSOCOM more leverage in encouraging DoD to pursue changes with OPM than if USASOC pursued it alone.

¹⁶ U.S. Department of Labor, Bureau of Labor Statistics, "Summary: Psychologists," *Occupational Outlook Handbook, 2012–2013*, March 29, 2012a.

¹⁷ Several colleges stand out for overall reputation, among them Miami University (Ohio), Boston University, Seton Hall University, Old Dominion University, Texas A&M University, Ball State University, and Florida State University, according to GradSchools.com, "Sports Psychology Graduate Programs," web page, undated.

USASOC should not rush to request direct hiring authority. It is unlikely that USASOC (or USSOCOM) would be granted such authority under OPM procedures. In our estimation, pursuing this would be challenging and unlikely to succeed.

USASOC should monitor the labor market for all THOR³ specialties and consider hiring and retention bonuses for fields in which staff have multiple, lucrative options. Other, less tangible benefits from serving with Army SOF soldiers should also be regularly emphasized to let THOR³ staff know they are appreciated and to attract personnel who would see their work as a contribution to national security.

Leader Development and Education

Leader development and education (LDE) is central to any military organization that strives for excellence, and it is a pillar of the U.S. military DOTMLPF-P system of systems. In this chapter, we look at LDE with respect to THOR³ medical and nonmedical staff, as well as USASOC leaders' understanding of what THOR³ can do for their units' effectiveness and their soldiers' lives. We begin by examining the roles of medical staff, then turn to nonmedical staff, including those (in medical or nonmedical specialties) charged with supervising the delivery of THOR³ services to USASOC units. We conclude with LDE-related observations about USASOC leaders in general.

The THOR³ medical staff includes physical therapists, dietitians, and, potentially, cognitive enhancement specialists.¹ Medical staff members are state or federally licensed with a health-related or medical degree and are credentialed through the MTF. Nonmedical staff is defined as THOR³ staff members who do not meet these criteria. These positions currently include the program coordinator and the strength and conditioning staff and would also include any future administrative staff positions. USASOC should review LDE processes for the professional staff to determine prerequisite, maintenance, and future requirements.

The structure of the program and how it is led are also important for this analysis. As discussed in Chapter Two, THOR³ is currently a decentralized program, and most substantive decisions are made in the unit-level program offices. Furthermore, the THOR³ headquarters office is not staffed to provide much beyond administrative support to these unit-level offices (e.g., it provides semiannual lessons-learned workshops but not much oversight or direction).² Such decentralization shifts most of the responsibility, including that for LDE, to the local leadership. Therefore, a highly skilled program coordinator is required to independently create and maintain the ability to support, develop, and supervise all THOR³ program staff. Developing these leaders will be an important consideration.

Medical Staff

We identified two principal areas of concern for the THOR³ medical staff, with the assumption that they arrive at THOR³ with the education, experience, and credentials required for

¹ Cognitive enhancement specialists with doctoral degrees would fall under this category, but those with master's degrees would not, according to interviews with THOR³ and officials in the USASOC Office of the Deputy Chief of Staff, Surgeon, in March 2012.

² Interview with THOR³ program administrator, March 2012.

the position. The first is how to maintain the medical staff's professional accreditation and adequate skills. The second is the education and skill development and education that THOR³ medical (and nonmedical) staff will need that are specific to their responsibilities but not covered in existing licensing and credentialing protocols.

Professional Accreditation

For medical staff, requirements to maintain accreditation and skills are closely linked. State and federal officials set specific education requirements for licensed medical professionals that apply to THOR³ medical positions. For most nonphysician positions, these requirements are denominated in continuing education units (CEUs); for physicians, this training is called continuing medical education (CME). Medical staff are licensed by a state, which regulates and legislates the exact amount of continuing education they must acquire each year (and, sometimes, the specific classes that the provider must attend), as well as when licenses have to be renewed. Most military and civilian medical staff can meet these requirements by attending one or more annual conferences specific to their licensing or by participating in other approved educational activities. Physicians, such as psychologists in cognitive enhancement positions, require 15–50 hours per year of continuing education;³ in 37 states and territories, physical therapists must earn some number of CEUs or hours of continuing education;⁴ and dietitians must accumulate 15 CEUs per year (75 CEUs over a five-year period).⁵ The local MTF will monitor the medical staff to ensure that they are meeting their licensing and CEU/CME requirements. This is a significant strength of credentialing: THOR³ program directors do not need to monitor this aspect of LDE.⁶ Furthermore, the responsibility for maintaining and reporting CEUs and CMEs to the MTF resides with the individual specialist.

The role that other USASOC medical professionals outside the THOR³ program could play in providing LDE to the program's medical staff is not entirely clear, primarily because the MTF has responsibility and authority over all medical providers at a military post. However, there are good examples of these types of arrangements. Naval Special Warfare Command's TAP has a formal and robust medical support arrangement for physical therapists articulated in its defining documents. An orthopedic surgeon who is designated by the MTF to support TAP is on call and makes weekly visits to the unit to provide sailors with orthopedic services.⁷ This support not only provides TAP sailors with better access to medical care but also puts the TAP medical staff in regular direct contact with higher-level medical professionals. USASOC's ACE I program has similar arrangements.⁸ For cognitive enhancement specialists (who are not part of either TAP or ACE I), USASOC already has assets that it can use to provide support and help develop the THOR³ staff. In particular, SOCEP should be considered an important

³ See the CME guidelines for physicians at Medscape, "State CME Requirements," web page, last updated May 31, 2011.

⁴ See the CEU guidelines for physical therapists at Federation of State Boards of Physical Therapy, "Continuing Competence," *Jurisdiction Licensure Reference Guide*, 2008.

⁵ See the CEU guidelines for registered dietitians at Commission on Dietetic Registration, Online Credential Verification System, undated.

⁶ See Army Regulation 40-68, 2009, p. 3, for a discussion of the oversight of the medical provider credentialing.

⁷ Naval Special Warfare Command PAT Instruction 6330.1, Subject: Naval Special Warfare Tactical Athlete Program (TAP), December 14, 2009; interview with PAT physical therapist, February 2012.

⁸ ACE I human performance and rehabilitation program briefing provided to RAND, March 2012.

partner in assessing cognitive enhancement efforts and providing the necessary foundation for quality, appropriate, and targeted continuing education for cognitive enhancement specialists. SOCEP could also help train and provide support to program coordinators as they develop their knowledge and skills in this field.

Job-Specific Knowledge and Skill Sets Unique to USASOC

The second LDE consideration for THOR³ is the education and skill development that the program's medical (and nonmedical) staff will need, as indicated by their responsibilities, but that are not covered in existing licensing and credentialing protocols. Most important in this area are the job-specific knowledge and skill sets that are unique to USASOC. These skills may differ across USASOC units and specialties. For example, the physical skills required of an ODA team sergeant may differ from those of a pilot in the 160th SOAR, so strength and conditioning staffs that support these units should customize the training they provide to meet the needs of different personnel. However, this might not be the case universally. For example, the cognitive skills needed by all USASOC soldiers would likely be similar, according to two of the Army's premier experts in this field, though their application would be different.⁹ As a result, individual THOR³ program coordinators may best understand the requirements for a given specialty in a particular unit and may be best positioned to help develop the skills of subordinates; in other specialties, there may be opportunities for a more standardized approach.

Beyond this, familiarity with the USASOC community—how it operates, how its soldiers approach training and problems in general, and other aspects of its culture—will also be important for effective job performance. However, because needs will vary with the units supported and even, to some extent, the individuals taking advantage of the THOR³ program, most of this familiarity will be acquired through exposure to USASOC units and soldiers, according to the USASOC personnel interviewed for this study. Some specific selection criteria could help ensure that THOR³ staff candidates are able to develop these skills. For example, the human performance component of the ACE I program conducts behavioral screening of potential job applicants before hiring to ensure that they are compatible with the unit's culture. Another possible criterion might be prior military service, particularly in the SOF community, which would indicate that candidates are at least familiar with the military mindset of training, doctrine, customs, and courtesies and have a clearer understanding of their future work environment.

This report does not dissect the needs of individual unit types and specialty pairs in detail. An examination of LDE requirements that takes these two factors into consideration would likely be beneficial.

⁹ Discussions with Army cognitive enhancement experts involved in the formation of the Army-wide program for comprehensive fitness, March 2012. As such, the educational component of the cognitive enhancement specialist's job would be standard across USASOC. In fact, SOCEP teaches the same skills to all the special operators and XVIII Airborne Corps personnel it trains, according to discussions with its staff in March 2012. However, the application of these skills will differ with individual soldier mission requirements, and this aspect of the cognitive enhancement specialist's daily efforts would differ as well.

Nonmedical Staff

Perhaps the most critical THOR³ position is that of the unit-level human performance program coordinator, because he or she supervises both the strength and conditioning component of the program at the O-6-level commands and all medical and nonmedical staff.¹⁰ Furthermore, as the position is currently designed, the program coordinator is responsible not only for the delivery of THOR³ services, but also (implicitly) for the LDE of the local staff.¹¹

While the individuals hired for these positions seem to have great competence in their technical area of expertise (strength and conditioning), our interviews indicated that there is a shortfall in their ability to manage several aspects of THOR³. Specifically, these personnel do not see much of a role for cognitive enhancement specialists in the unit-level program. As discussed in Chapter Two, two conclusions can be reached from this interview feedback: Either THOR³ does not need cognitive enhancement specialists or the personnel running the unit-level programs do not understand the need for them and so are not adequately educated and developed in the broad spectrum of skills designed into the THOR³ program. Because no other special operator community has implemented a cognitive enhancement element in its program, there are no mature examples to point to that demonstrate the need for these specialists. However, the West Point CEP and SOCEP approach to cognitive enhancement is well established, and USSOCOM allocation rules for cognitive enhancement specialists appear to support a similarly strong theory of the value of this skill. Furthermore, SOCEP believes that the THOR³ cognitive enhancement specialist could provide a synchronized approach in this field, integrating, deepening, and building continuity in mental preparedness through daily conditioning exercises.¹² These exercises would draw upon, refine, and develop the skills learned through SOCEP.

As such, our interview results showing an almost universal underappreciation for the role of cognitive enhancement specialists reflect a shortfall in THOR³ staff capabilities and indicate a flaw in the degree to which supervision of all aspects of THOR³ can be decentralized. This points to a clear need for LDE to instill in the program coordinators the skill sets and professional knowledge needed to efficiently manage all medical and nonmedical staff. It may prove difficult for USASOC to hire program coordinators who already have the knowledge and skills to understand and orchestrate the full program. Building on the high-level sports analogy used by THOR³ to develop position descriptions for these (and all) THOR³ billets, we note that this is a skill set possessed by the senior coaching staff of high-level sports teams, who typically make significantly higher salaries than the THOR³ program can offer.¹³ Other options

¹⁰ Position description DL331429, Human Performance Program Coordinator, YH-0601-02, September 8, 2009 (provided by USASOC THOR³ headquarters).

¹¹ Position description DL331429, Human Performance Program Coordinator, YH-0601-02, September 8, 2009 (provided by USASOC THOR³ headquarters). This individual reports to the command's operations officer.

¹² Interview with SOCEP staff, March 2012.

¹³ The maximum salary for a GS-13 position in the U.S. government service is \$93,175 (GS-13, step 10, for 2012), according to OPM (U.S. Office of Personnel Management, "Salary Table 2012-GS," January 2012). The director of performance on a professional sports team—the coaching position that oversees strength and conditioning coaches, physical therapy and training departments, dietitians, and sports psychologists—typically makes well over twice that amount, according to one former director of performance (email exchange with the authors, March 2010). Of course, there are other intrinsic motivations that may lead staff with these capabilities to consider THOR³, such as a commitment to the mission and soldiers who defend the nation. However, building a human resources policy with the hope that such motivations will outweigh labor

for overcoming this challenge include requiring that candidates for this supervisory position have experience supervising medical staff or hold a master's degree in health care administration or to fill this position with a medical staff member.¹⁴ For example, there are many physical therapists, dietitians, and psychologists who have commanded military MTFs and understand the system well, so former military medical or medical service corps officers might make good candidates if they also have high-level sports experience. While this might not guarantee better success, it would at least ensure that candidates are familiar with managing multidisciplinary medical staffs. Additionally, the program coordinator should have industry-proven, solid metrics for each medical specialty, which would allow him or her to better monitor the quality of care provided and apply advice from the MTF or USASOC medical staff on using these metrics.¹⁵

Importantly, whether the program coordinator is a medical or nonmedical professional, he or she will need to be able to develop and implement a program that provides the most benefit for his or her supported command. This will require familiarity with the best practices for all four THOR³ staff specialties and the ability to supervise and develop staff members. Because several of the current program coordinators do not have these skills, USASOC should be prepared to develop them to this level. This will require the THOR³ headquarters staff, with assistance from the USASOC Office of the Deputy Chief of Staff, Surgeon, to create an understanding of what skills are needed, assess the skill development and education needs of program coordinators (both new staff and those already on board), and provide them with the professional education needed to properly administer their programs. The THOR³ headquarters staff does not currently have the manpower, expertise, or assessment frameworks to do this. It may also require that THOR³ headquarters staff provide resources—fiscal and informational—to the program coordinators to help them develop their own staffs, again with assistance from the USASOC Office of the Deputy Chief of Staff, Surgeon. Finally, once an approach for program coordinator assessment and LDE is established, each program coordinator, in coordination with the THOR³ headquarters staff, should formally plan for this education with the supported unit's direction based on deployments, workload, and other factors that affect schedules.

Turning to the technical skills required of the program coordinator as the head of the strength and conditioning element of THOR³, qualification and experience requirements for a program coordinator include a master's degree and current Certified Strength and Conditioning Specialist (CSCS) credential from the National Strength and Conditioning Association (NSCA), as well as one year of experience at the next lower level of exercise physiology. This provides the basic knowledge needed to perform as a CSCS staff member. Because the prerequisites for this position also require significant anatomy, physiology, and medical knowledge, with the additional development noted earlier, this should be sufficient to provide the bridge between the program coordinator and the medical staff.

market considerations is not a good approach. The bottom line is that USASOC should be prepared to develop those hired as program coordinators so that they can supervise all staff and deliver needed services to supported units.

¹⁴ The position description does consider physical therapists, for example, as possible candidates.

¹⁵ Provider monitoring is the way the medical industry validates a medical provider's worth. Medical supervision from the MTF would also be useful in this regard and should be the responsibility of the MTF. However, this is not a substitute for a program coordinator who can monitor the quality of the care provided and the skill development of staff members.

For the CSCS staff, the continuing education requirements are set by the NSCA, a national association, and therefore do not fluctuate from state to state. The NSCA currently requires six CEUs over three years. These six CEUs equate to about 60 hours of additional education over three years, or approximately 20 hours per year.¹⁶ This is comparable to the number of CEUs required by the medical community. As with medical staff, the USASOC-specific knowledge and skills may be best acquired on the job rather than through formal training, though previous exposure to the military would help.

The CSCS staff are not credentialed through the MTF and, therefore, their accreditation must be monitored by THOR³. We recommend that a monitoring system be put in place for staff members' CSCS certification status. This could be as simple as requiring that CSCS staff periodically resubmit their accreditation from the NSCA to the program coordinator or THOR³ headquarters staff. As in the medical fields, funding should be provided by the command for Army civilian (and, if applicable, military) staff members to maintain this accreditation, though this burden is sometimes placed on the individual.¹⁷ Contracts should specify how continuing education will be funded for contractors filling THOR³ billets. Finally, some medical providers are required to return to the state in which they are certified for training, so units should plan for additional travel expenses for these staff.¹⁸

The LDE considerations for administrative staff do not differ from those for similar staffs in other parts of USASOC and so are not addressed in this report.

Findings and Recommendations

In summary, THOR³ currently has no formal ability to develop its leaders or provide education for its staff. This responsibility is left to the individual staff member and the unit-level program coordinator. This is common practice for medical personnel.¹⁹ However, it does not prepare program coordinators and other staff for supervisory positions.

The MTF oversees technical proficiency and licensing for medical staff. However, its oversight does not take into account the additional knowledge needed to provide services to high-end sports teams, knowledge that is specific to high-end sports training and medicine, or the need to develop an understanding of the USASOC community and how best to provide services to these personnel. Currently, THOR³ personnel do this through informal emails and information sharing across the community, as well as through semiannual best-practices workshops sponsored by THOR³ headquarters staff. THOR³ headquarters personnel told us that this works well and may be sufficient for technical skills (though one interviewee claimed that these channels did not provide access to the most recent information).

THOR³ needs to develop its program coordinators so that they understand the purpose for and how best to use the four types of specialists that make up their teams. This should be a THOR³

¹⁶ CSCS continuing education requirements can be found at National Strength and Conditioning Association, "Continuing Education," web page, undated.

¹⁷ Details on professional responsibility regarding licensure can be found in Army Regulation 40-68, 2009, p. 13, para. 4-5.

¹⁸ American Medical Association, "Continuing Medical Education for Licensure Reregistration," *State Medical Licensure Requirements and Statistics*, 2010.

¹⁹ Interview with representative from the USASOC Office of the Deputy Chief of Staff, Surgeon, March 2012.

priority. The focal point for THOR³ LDE is the program coordinator. Current program coordinators appear to lack a comprehensive understanding of the purpose for and how to best use staff with the four specific skill sets on their teams. Although we did not conduct a comprehensive assessment of their development needs for this study, our research indicates that they require training on the purpose and usefulness of cognitive enhancement, and some may require help supervising the full unit-level program once it is fully staffed. Rectifying these shortfalls should be a THOR³ headquarters responsibility, but it is neither staffed to do this nor does it have the necessary assessment tools to do it well. (The supported units will also want to be involved to ensure that their program is providing the best possible support.) To foster the ability of the THOR³ headquarters office to assess, develop, and monitor program coordinators, the program will need experts in each specialty and an approach to assessing the needs of subordinate programs. Current plans envision hiring experts in strength and conditioning, physical therapy, and dietetics but not in cognitive enhancement. If SOCEP can fill this void and support the headquarters staff, this might be adequate.

THOR³ needs to develop its program coordinators so that they are able to supervise the delivery of high-level medical care with support from unit medical personnel and the MTF. The ability to provide medical services at the level of a high-end sports team that are tailored for the supported unit will differ with the unit type and the specialty of the THOR³ team in question. Currently, the job descriptions for the program coordinators do not include a requirement to supervise medical personnel and ensure this level of medical support. Because the THOR³ headquarters office is not staffed to provide oversight or develop program-level staff in this field, the USASOC Office of the Deputy Chief of Staff, Surgeon, and unit medical personnel should assist in developing this medical component of THOR³. Furthermore, the program may consider opening the program coordinator slots to any of the three medical specialties employed in the program, rather than just to strength and conditioning coaches. The supervision of medical staff might be more natural for a program coordinator who is a medical staff member. But, in all cases, the ability to lead and develop the entire team will require LDE.

THOR³ needs to develop its program coordinators so that they are able to supervise much larger staffs than they currently have. Program coordinators currently supervise small teams of up to five professionals. At full staffing, they will supervise teams of as many as 30, who, in some cases, will be in more than one location. While it is not clear that this will be a problem, the job descriptions and advertisements for program coordinators do not specify this as a requirement. THOR³ should be prepared to help program coordinators meet this requirement if difficulties arise.

THOR³ program coordinators should monitor the currency of the professional credentials of their strength and conditioning staff, and the THOR³ headquarters staff should monitor the currency of the program coordinators. Because the nonmedical staff are not credentialed through the MTF, THOR³ should put into place a system to monitor their credentials.

Facilities, Materiel, and Training Assessment

Unlike the organizational, personnel, and LDE considerations addressed in Chapters Two through Four, materiel and facilities are relatively straightforward subjects. In particular, USSOCOM has specified baselines for each, and USASOC, through its policy of decentralized operation for THOR³, has established an approach to procuring materiel. This chapter provides an overview of these baselines and practices and proposes an approach to assessing the adequacy of both facilities and materiel for the THOR³ program. This assessment approach should ultimately help the USASOC leadership rapidly determine the status of the program with respect to these elements of DOTMLPF-P. Finally, we examine training from the perspective of the criteria outlined in USSOCOM's ICD for the program. In this chapter, each section concludes with findings and recommendations.

Facilities

We used the USSOCOM baseline guidelines for human performance program facilities to determine the requirements for THOR³ to recommend construction priorities. As noted previously, USASOC has indicated that all of its soldiers will have access to THOR³, but we found in our discussions with USSOCOM staff that it wants to limit the program to 18-series special forces soldiers (which we interpret to mean the SFGs), the Ranger Regiment, and the 160th SOAR. This question will drive facilities requirements, and, because it is not yet resolved, it may be useful for USASOC to prioritize its facilities construction requests so that work can begin quickly.

USSOCOM has developed guidelines for facilities based on the number of soldiers in the supported unit:¹

- 15,000 square feet for units with no more than 1,000 soldiers authorized
- 30,000 square feet for units with more than 1,000 but fewer than 3,000 personnel
- 40,000 square feet for units with more than 3,000 soldiers.

Schematics for the USSOCOM-recommended facilities can be found in Appendix A. We note that these schematics do not include room for cognitive enhancement equipment, but we used them as a baseline for construction guidelines anyway, with the understanding that some room will be required for these activities.

¹ This analysis was conducted by the USSOCOM Surgeon's office and provided to RAND in December 2011.

Cost

To provide USASOC with a useful estimate of the costs it might incur for building or converting existing structures into adequate THOR³ facilities we make the following observations and consider the following factors:

- O-6–level commands and separate O-5–level commands should have their own facilities. Having ready access to THOR³ services and permitting the THOR³ staff to tailor the equipment and usage of the facility to maximize program results are essential to the adequate functioning of the program.²
- Temporary-duty units would not have dedicated THOR³ facilities because these soldiers are not required to maintain the same levels of readiness as soldiers in other USASOC units.
- A cost of \$300 per square foot is a reasonable planning guideline for USASOC-wide cost approximation, even though facilities costs will vary based on location and type of construction.³

At the time of this research, most units had facilities of some sort, yet none met the USSOCOM standard.⁴ USSOCOM has developed planning templates for small and large facilities. Although a medium template has not been developed, both USSOCOM and USASOC Office of the Deputy Chief of Staff, Surgeon (under which THOR³ falls), with concurrence from unit representatives, state that a 30,000-square-foot facility is optimal for SFGs and like-sized units based on the supported population. Table 5.1 uses the USSOCOM guidance and the factors outlined here to provide cost estimates for building new facilities that meet the USSOCOM guidelines, based on the \$300-per-square-foot estimate noted earlier. We note that many existing facilities are likely adequate and will be retained for THOR³ use, even though they do not strictly meet the USSOCOM guidelines (e.g., the 1st SFG's 26,000-square-foot facility very nearly meets USSOCOM's 30,000-square-foot planning criteria). We present the full cost estimate to help USASOC make decisions about what it needs and does not need to build.

Required Facilities, by Functional Area

The strength of the THOR³ program is that it brings the SOF warrior together with performance training and medical professionals to provide a unified approach to fitness and readiness. The 1st SFG's existing 26,000-square-foot facility serves as the best current model in USASOC, even though it does not strictly meet USSOCOM minimum requirements. It has areas dedicated to strength and functional fitness training, cardio, speed work, combat-ives, physical therapy, and office space for a dietitian and administration, as well as latrines.

² This was the universal opinion of the THOR³ personnel and personnel from other, similar programs that fall under USSOCOM who were interviewed for this effort. USASOC staff also agreed with this approach.

³ The \$300 planning factor was provided by the USASOC Office of the Engineer and is a reasonable estimate, although cost will vary by location. See U.S. Department of Defense, *Unified Facilities Criteria (UFC): Fitness Centers*, Washington, D.C., UFC 4-740-02, September 26, 2006, for planning considerations.

⁴ Information on unit facilities was provided by unit representatives. The RAND research team also visited several sites to assess THOR³ facilities.

Table 5.1
Costs Associated with New THOR³ Construction for All USASOC Units (excluding USASOC headquarters, USASFC headquarters, and SWCS)

Unit	Location	Cost (\$ millions)	Facility Size	Square Feet
USASOC special operations units				
1st SFG	Fort Lewis, Washington	9.0	Medium	30,000
1st Battalion/1st SFG	Okinawa, Japan	4.5	Small	15,000
3rd SFG	Fort Bragg, North Carolina	9.0	Medium	30,000
5th SFG	Fort Campbell, Kentucky	9.0	Medium	30,000
7th SFG	Eglin Air Force Base, Florida	9.0	Medium	30,000
10th SFG	Fort Carson, Colorado	9.0	Medium	30,000
1st Battalion/10th SFG	Stuttgart, Germany	4.5	Small	15,000
4th Military Information Support Group	Fort Bragg, North Carolina	9.0	Medium	30,000
95th Civil Affairs Brigade	Fort Bragg, North Carolina	4.5	Small	15,000
Total		67.5		
USASOC maneuver units				
75th Ranger Regiment	Fort Benning, Georgia	4.5	Small	15,000
1st Battalion	Fort Lewis, Washington	4.5	Small	15,000
2nd Battalion	Hunter Army Airfield, Georgia	4.5	Small	15,000
3rd Battalion	Fort Benning, Georgia	4.5	Small	15,000
160th SOAR	Fort Campbell, Kentucky	9.0	Medium	30,000
3rd Battalion	Hunter Army Airfield, Georgia	4.5	Small	15,000
4th Battalion	Fort Lewis, Washington	4.5	Small	15,000
Total		36.0		
USASOC sustainment/support units				
528th Sustainment Brigade/112th Signal Battalion	Fort Bragg, North Carolina	4.5	Small	15,000
Total		4.5		
Total (all units)		108.5		

However, 1st SFG does not yet have a cognitive enhancement specialist, so no space is currently dedicated to this function, and that space will have to come out of existing facilities.

The 1st SFG facility has a layout that works well for this community and offers potential lessons for other SFGs as they consider their facility needs. Each THOR³ training facility design should consider both the layout of this facility and the particular needs of the individual command.

Because THOR³ is an important program for preparing USASOC soldiers for their missions and rehabilitating those who have been injured, and because the process for securing

funds for military construction and then building facilities can take years, USASOC should also consider creating temporary facilities for their THOR³ programs, similar to those that are sometimes established for large overseas operations. These facilities would be relatively inexpensive to stand up and could enable THOR³ to better serve USASOC soldiers.

In addition to having a clear concept of the cost of adequate facilities, USASOC should also establish priorities for construction. To do this, USASOC must be able to assess the adequacy of its facilities and their importance to the units, at least until all facilities meet baseline requirements. A simple USR-like assessment mechanism would both adequately describe facilities and be well understood by those who must consider USASOC's requests for military construction funding. In particular, we propose the following simple rating system that could help the command understand these needs:

- F1: A USASOC unit should be considered F1 if its facilities meet the USSOCOM baseline standard requirements described in Appendix A. Currently, no USASOC unit would be F1.
- F2: A unit should be considered F2 if its facilities are adequate for its current staff and client base. This will be a moving target as more THOR³ staff members are hired and as more USASOC soldiers take advantage of THOR³. Currently, some USASOC units are F2, such as 1st SFG. However, this is a subjective assessment that will be hard to standardize across USASOC. One approach would involve assessing whether unit personnel are unable to use the facility because it is fully occupied. If this is rarely the case, the unit would be considered F2.
- F3: A unit should be considered F3 if it has a facility but it is not adequate for the THOR³ staff and client base. Should the recommendation on the use of temporary facilities be adopted, units that use them would be considered F3. Currently, the 75th Ranger Regiment and the 5th SFG might be considered F3.
- F4: A unit should be considered F4 if it does not have a facility.

Once all facilities meet baseline requirements, there should be no need to continue rating facilities on this scale.

Given such an assessment, USASOC would also need to set priorities within each F-category. It could base these priorities on either the capacity of the existing facility (e.g., units with facility authorizations of like size would be prioritized by the size of their existing facility) or other criteria set by USASOC. Because there are not many units and each commander has regular input, such prioritization should be straightforward. For example, USASOC might prioritize the SFGs, the Ranger Regiments, and the 160th SOAR higher than other units because of the more physically demanding nature of their tasks.

Findings and Recommendations

The following findings and recommendations are meant to help USASOC prioritize funding and efforts.

Each USASOC unit that has been authorized a THOR³ program should have a THOR³ training facility that meets USSOCOM standards, and, accordingly, USASOC should submit military construction requests to USSOCOM. The SFGs, Ranger Regiment units, and 160th SOAR should be given top priority for THOR³ facilities due to the critical nature of their missions and the significant physical and mental demands on their soldiers. The 160th SOAR

facility recently suffered tornado damage, and its THOR³ program is operating out of temporary facilities. That unit should be given top priority for construction. Further, in accordance with the adequacy of their current facilities and other criteria determined by USASOC, SFG and Ranger Regiment facilities should be replaced or enhanced to meet USSOCOM facility objectives.⁵

Facilities for the USASFC, 4th Military Information Support Group, 95th Civil Affairs Brigade, 528th Sustainment Brigade, and 112th Signal Battalion should be built to coincide with the creation of their THOR³ programs. If cost savings are critical, USASOC might consider building a large (40,000-square-foot) shared facility dedicated to these units, as well as USASOC and USASFC headquarters personnel. However, this option runs counter to the principle that units should have their own, dedicated THOR³ assets.

A new facility for SWCS should be built after all unit facilities are in place. SWCS currently has a facility, but it is challenged with space limitations, and the school needs a larger one to accommodate its unique training mission and large student population.

While USASOC requests military construction funds to build new facilities, it also should examine the use of temporary facilities to fill shortfalls. Temporary gyms have been used with great success on major deployments, according to USASOC staff, and are an inexpensive and fast way to provide units with facilities, or expanded facilities, while funds are being requested.

Materiel

We now discuss the materiel requirements for the THOR³ program and identify a standard materiel baseline from which units can tailor their requirements. USSOCOM has published a baseline for the programs it supports in its various subordinate commands (including THOR³), but it does not insist that it be strictly adhered to (see Appendix B for details). Similarly, the USASOC THOR³ headquarters office leaves such decisions up to the individual unit THOR³ program staffs to work out with the supported unit (which pays for the equipment). In fact, our interviews and site visits indicated that commands establish their own requirements based on the needs of the units and the preferences of those running the unit-level THOR³ program.

In the unanimous judgment of the THOR³ program coordinators and other staff we interviewed, as well as the opinion of USASOC subordinate command representatives and staff with whom we discussed this issue, a decentralized approach works best for providing a tailored program that meets the needs of soldiers. Furthermore, each coach has materiel preferences that support his or her coaching techniques and the goals established for those he or she trains. Appendix B presents an analysis conducted by the USSOCOM Surgeon's office identifying materiel requirements for a 15,000-square-foot facility and a 40,000-square-foot facility. These baseline requirements should be viewed as analogous to a THOR³ Table of Organization and Equipment (TOE), which each unit should modify based on its specific requirements—effectively, a THOR³ Modified Equipment Listing for each unit. But, like a TOE, it establishes

⁵ Units in this category that currently have adequate facilities (e.g., 1st SFG) should not necessarily be placed higher on the priority list for new facilities than USASOC units that do not fall into this category and do not have facilities (e.g., 4th MISG or 95th Civil Affairs Brigade). However, there is a danger of prioritizing units without facilities higher than SFGs or Ranger Regiment units; if USSOCOM decides not to fund facilities for these type of units, military construction funds for SFG, Ranger, or the 160th SOAR units that USASOC prioritized lower than units of other types also might not get funded.

a reference point for developing specified needs and can be used as the basis for assessing the adequacy of what is required.

Tables 5.2 and 5.3 provide a stratified cost summary associated with outfitting each of these baseline facilities to USSOCOM specifications. As for facilities, USSOCOM provides equipment baselines for small and large facilities but not for medium-sized ones—those that are most common for THOR³. Equipment requirements for units that have more than

Table 5.2
THOR³ Small Training Facility: Baseline Materiel Cost

Materiel Type	Cost (\$) for 15,000-Square-Foot Facility
Cardio equipment	62,909
Human performance weight room equipment	186,450
Human performance miscellaneous equipment	158,962
Testing and evaluation equipment	65,431
Sports medicine rehabilitation equipment	583,650
Sports medicine miscellaneous equipment	35,800
"Mind Gym" equipment ^a	328,750
Total	1,421,952

NOTE: Prices are rounded to the nearest dollar.

^a Although cognitive enhancement is not well understood in USASOC, USSOCOM has conducted preliminary analysis on equipment considerations (see Appendix B). The cost associated with enhancing cognition will necessarily vary based on whether cognition is included in THOR³.

Table 5.3
THOR³ Large Training Facility: Baseline Materiel Cost

Materiel Type	Cost (\$) for 40,000-Square-Foot Facility
Cardio equipment	125,818
Human performance weight room equipment	245,596
Human performance miscellaneous equipment	70,285
Testing and evaluation equipment	252,935
Sports medicine rehabilitation equipment	583,650
Sports medicine miscellaneous equipment	35,800
"Mind Gym" equipment ^a	506,150
Total	1,820,233

NOTE: Prices are rounded to the nearest dollar.

^a Although cognitive enhancement is not well understood in USASOC, USSOCOM has conducted preliminary analysis on equipment considerations (see Appendix B). The cost associated with enhancing cognition will necessarily vary based on whether cognition is included in THOR³.

1,000 and fewer than 3,000 soldiers can easily be developed by extrapolating from these two lists based on the authorized number of personnel in a unit.

Furthermore, requirements for THOR³ materiel (equipment) can be placed into two categories: materiel required for human optimization and materiel required for rehabilitation or recovery. There are three components to optimizing human performance: physical, nutritional, and cognitive:

- Materiel requirements for optimizing physical performance are well known and include such items as squat racks, benches, cardio equipment, dumbbells, kettlebells, and ropes.
- Requirements for nutrition are negligible (however, office equipment and training aids would be needed).
- Materiel for rehabilitation is under the purview of the physical therapist and is fairly standard. Equipment includes physical therapy tables, ice machines, compression machines and devices, antigravity treadmills (including aquatic treadmills), and other similar items.
- Equipment required to optimize cognitive performance is least well understood by the THOR³ unit program staff. As previously noted, here is a significant lack of knowledge in the THOR³ community regarding what a cognitive enhancement specialist can provide, with most equating this position with a sports psychologist. Most assumed that enhancing cognition was equivalent to training for mental toughness, and this type of training is not required in the SOF community; operators are selected for their mental toughness. However, this is not at all what SOCEP teaches at SWCS or what cognitive enhancement specialists following these training and exercise protocols would do, according to interviews with SOCEP staff and their previous work with other units. Regardless, the equipment required to enhance cognition might include training aids to improve hand-eye coordination, test visual fields, and sharpen memory, as well as simulators and virtual technologies.⁶

Findings and Recommendations

Our review led us to the following key findings and recommendations concerning THOR³ materiel.

USASOC should continue to let subordinate units enjoy autonomy when it comes to materiel identification and acquisition for the physical side of THOR³. For the physical side of human optimization and for physical therapy, current practices for acquiring materiel seem adequate, so our recommendations are minimal. Mission requirements across the command vary greatly, and requiring all units to train the same way would be counterproductive. However, sharing best practices should be encouraged and actively managed by the THOR³ headquarters office.

For the mental side of human optimization (cognitive enhancement), the THOR³ headquarters office should provide subordinate units with assistance in equipment selection. Materiel for cognitive enhancement efforts is not yet widely understood throughout USASOC, and since this element of THOR³ program is only just starting up (only one unit had a cognitive enhancement specialist at the time of this writing) and not present at all in similar programs, there are no best practices from THOR³-like programs to consider. Current program coordinators do not understand cognitive enhancement as taught by SOCEP, so they may not be well posi-

⁶ Interviews with United States Air Force Academy Human Performance Laboratory staff and the approach taught at SOCEP.

tioned to determine what is needed for their programs independently. Cognitive enhancement specialists (when hired) may not be a good source of input on equipment needs, since current plans call for these specialists to be contract personnel, and, as a result, they may not be familiar with the SOCEP approach, and their influence on what is needed may vary considerably. Thus, the THOR³ headquarters office should initially play a role in equipment selection for cognitive enhancement, although a more decentralized approach may make more sense once this part of THOR³ is mature. The program should ask SOCEP for assistance with equipment selection.

Lessons from SOCEP and USSOCOM guidelines should be used in developing equipment requirements. In all cases involving equipment, the USSOCOM equipment lists in Appendix B should serve as a baseline from which units can diverge based on their unique needs. However, because the SOCEP approach is taught at SWCS and looks likely to dominate the cognitive enhancement element of THOR³, unit equipment requests should be informed by SOCEP.

THOR³ headquarters should help units develop funding requests for cognitive enhancement equipment in tandem with fielding cognitive enhancement specialists at the unit level. Because materiel for cognitive enhancement can be quite expensive (extrapolating between the small- and large-facility estimates, the equipment will cost around \$400,000 for an SFG), units may need assistance from USASOC to fund these purchases. The headquarters office, working with SOCEP, should help units prepare these funding requests, particularly the justification for the funds.

No formal assessments of materiel are needed. We see little reason to recommend USR-like (or any other) assessment criteria for materiel. Materiel holdings will not be dynamic, and current practices seem to meet the program's needs. Adequate oversight by a well-staffed THOR³ headquarters office should identify shortfalls without a formal assessment system for materiel.

Training Assessment

USSOCOM's Warrior Rehabilitation Performance Center ICD, dated February 20, 2009, and approved on June 2, 2009, established the THOR³ program as a program of record. It also stipulated quantitative goals for improvement in several areas (see Table 5.4). Moreover, the general consensus of those we interviewed in USASOC regarding these metrics, with which we agree, is that some are almost impossible to measure and, therefore, largely meaningless. Furthermore, given the high levels of fitness of USASOC soldiers, these experts believe that many of these percentage-improvement goals are physically impossible to achieve. Indeed, USSOCOM staff involved in overseeing THOR³ concurred.⁷

Despite these challenges, having a reasonable set of goals and an assessment framework for evaluating progress toward these goals is important for monitoring program performance. USASOC should consider creating a set of goals and an assessment framework that are well suited for its missions and units; without them, it cannot know what progress is being made. Given the variety of units, missions, and soldiers throughout USASOC and the decentralized character of THOR³, these goals and accompanying framework may also have to be tailored to unit circumstances. Furthermore, the workload to gather data and use the assessment frame-

⁷ Discussions with USSOCOM staff and site visit to USSOCOM headquarters, December 2011.

work should provide commanders with the information they need to understand their training and mission readiness, and it should not be too onerous to execute.

The following sections provide insights into the current assessments situation and challenges.

Data

To assess any goals, data are required. Currently, THOR³ collects performance data on some parameters of interest, including demographic and body composition data, as well as assessment scores for such activities as overhead/squat with grid (movement/flexibility), deadlift (strength), 300-meter shuttle (aerobic capacity), and the 5-10-5 agility test (agility). Data are also collected on physical therapy patients, along with diagnoses and some treatment-tracking information. At this time, there are no metrics in place to assess cognitive optimization; as the program matures, assuming cognitive optimization remains a program goal, this shortfall will need to be addressed. While these data help form a baseline, they do not include soldiers who do not participate in THOR³, thus making comparisons that would illustrate the value of THOR³ difficult.⁸ Additionally, it is worth noting that if system-wide assessments are desired, data submission from subordinate commands to the THOR³ headquarters office should be formalized to ensure uniformity across units. The data reported at uniform times (e.g., at the start and end of periods between deployments rather than midway between returning and departing on deployments).

Assessments Against USSOCOM Initial Capabilities Document Criteria

Optimized Human Performance

As shown in Table 5.4, parameters for the first priority capability from the USSOCOM ICD, “optimized human performance,” fall into physical and cognitive categories. On the physical side, these parameters are mobility, speed, strength, power, physical endurance, resilience, agility, and resistance to combat stress and disease. (On the cognitive side, addressed later, they are enhanced observation and cognitive skills, mental toughness, intellectual ability, creativity, and cultural adaptability.) Assessing physical performance parameters is straightforward, but the ICD criteria raise concerns. For example, achieving a 20-percent speed or strength gain, particularly for a soldier-athlete who is already performing at a high level, is unrealistic, according to human performance coaches interviewed for this research. Twenty-percent gains seem more appropriate for those who are new to a human performance program.

The data currently collected by THOR³ are of the right type, but according to our review, they are not adequate for the statistical analysis that would be required to establish quantitative progress. In some cases, too, they are inconsistent (e.g., data entries for individuals do not all contain the same information).⁹ In particular, to make quantitative assessments of THOR³'s performance as demanded by the ICD goals of 20-percent increases in capability, it would be

⁸ Assessments could also be based on trends if comprehensive measurements made when all soldiers initially entered THOR³ were available. From our examination of the available data, it does not appear that such statistics have been systematically kept.

⁹ The RAND study team was provided with two databases for this study. The first tracks physical therapy care and the second tracks human performance. The physical therapy data consist of 572 records and include demographic information on the injured soldier, the time and location of the injury, injury type, and diagnosis. The human performance database consists of 901 records and includes demographic information, unit, height and weight, time in the service and time in SOF, body fat percentage, and measurements for four events (overhead squat, deadlift, beep test, and 5-10-5 agility shuttle).

Table 5.4
USSOCOM's Warrior Rehabilitation Performance Center ICD Capability Descriptions

USSOCOM Priority Capabilities	Description	Parameters	Threshold (% improvement)
Optimized human performance	Enhance physiological, psychological, and intellectual performance; resist disease, stress, or injury caused by sustained operations in extreme environments	Mobility, speed, strength, power, physical endurance, resilience, agility, resistance to combat stress and disease; enhance observation and cognitive skills, mental toughness, intellectual ability, creativity, and cultural adaptability	20
Rapid recovery and reconditioning	Rapid repair and reconditioning capability	Accelerate the recovery and reconditioning to full mission capability from hostilities or occupational or environmental injury	20
SOF-specific occupational health and safety capabilities	Medical aspects of surveillance, training, and protective equipment for SOF-peculiar activities	Reduce the likelihood and severity of physical and psychological injury or disease from enemy, occupational, or environmental hazards	20

SOURCE: Warrior Rehabilitation Performance Center ICD, 2009.

necessary either to conduct an analysis that compares the physiological performance of those participating in THOR³ with a similar population that is not or to compare the state of those participating in THOR³ when they joined with their state after some time in the program.¹⁰ Data would have to be collected over time (the ICD does not dictate the timing for the 20-percent increases in performance) and statistical controls developed and introduced to account for different mission sets over time and by location (e.g., as OPTEMPO changes, time available for training will change; as units deploy into different environments, their training to prepare for specific missions and their ability to maintain their fitness while deployed will also change). Current data are not adequate for these types of statistical analyses.

It is our assessment that the THOR³ program may not have the ability to collect these data with its current staffing levels and reported workloads, and it does not have and will not have in the future the technical expertise to conduct such statistical analyses (though it could ask Army or contract organizations to set up and conduct these types of assessments). However, a team of researchers at the University of Pittsburgh is conducting detailed physiological research on THOR³ program participants for USASOC, which may answer some of these questions (though an assessment of THOR³ is not the purpose of the study). The goal of that research is to measure increases in physiological capability and to provide detailed suggestions to USASOC on how to improve the program based on extensive expertise in similar programs.¹¹ Data will be collected over a three-year period. This effort should yield valuable insights for assessments as well.

Also of note, USASOC has a program with a well-established physical assessment element that could serve as a model for THOR³. The assessment protocol for the 75th Ranger Regiment's Ranger Athlete Warrior (RAW) program, the assessment protocol is relatively

¹⁰ This latter method would likely suffice but could introduce a selection bias that would have to be accounted for.

¹¹ Interview with Scott Lephart, study team leader, University of Pittsburgh, December 2012.

simple and does not require sophisticated data analysis. It is given to all rangers twice during a deployment cycle. There are no age (or gender) categories for RAW assessments; all rangers are expected to perform to one standard regardless of age. RAW assessments comprise the eight following tasks: (1) 5-10-5 shuttle run, (2) standing broad jump, (3) 225-pound dead lift, (4) pull-up, (5) metronome push-up, (6) heel clap, (7) 300-yard shuttle run, and (8) the Ranger Physical Assessment Test. The substantial data on personnel performance on each of these tasks allow commanders to identify averages, establish goals, and track progress. Such a test for tracking the progress of soldiers participating in THOR³ would need to be administered USASOC-wide to establish comparisons between units that participate in THOR³ and those that do not (as discussed earlier). As unit-level programs mature, absolute strength, relative strength, VO₂ (a measure of the volume of oxygen required by the body), and body composition are all potential assessment approaches that are used in high-level sports (including at the United States Air Force Academy facilities we visited) and should be considered. Using such a test would not preclude individual program coordinators from using other metrics as they see fit.

Measuring resistance to combat stress and disease is problematic, and we make no recommendation in these areas beyond noting that resistance to combat stress is one of the most significant problems that the Army now faces, and it is an area of large-scale and active research. Indeed, participation in all physical training presupposes a reduction in these areas, and some cognitive training targets this specifically, but measurement is difficult.

Assessing intellectual and cognitive parameters is challenging. It requires accepted definitions and metrics that do not generally exist, according to our discussions with SOCEP staff. And while there are tests that can determine progress in certain cognitive abilities, there is currently nothing that would permit quantitative assessments of the type required by the ICD.¹² Furthermore, it is worth reiterating that there is significant misunderstanding across the command regarding the cognitive aspects of optimizing human performance. Most respondents understood this aspect of THOR³ to relate to sports psychology or mental toughness, and they generally thought that it should be beyond the scope of THOR³. If increasing the parameter “operator creativity” by 20 percent remains a goal of the program, how to assess it will require further study.

Rapid Recovery and Reconditioning

The second priority capability is “rapid recovery and reconditioning.” The goal is to accelerate the recovery and reconditioning of soldiers injured during hostilities or other circumstances (i.e., the metric is the time it takes for a soldier with a particular type of injury to return to duty). This seems like a reasonable metric for assessing the efficacy of the program. Furthermore, we know that participation in the THOR³ program should create a healthier operator and therefore improve the rate at which he or she heals. Feedback from physical therapists and human performance coaches interviewed for this research indicates that this is, in fact, what they are seeing, though these statements were based on routine observations and not scientific comparisons. Moreover, having dedicated physical therapists, and thus making better care

¹² Interviews with SOCEP personnel, April 2012. For example, SOCEP can conduct repeated assessments of standard physiological characteristics, such as blood pressure and heart rate, before, during, and after exposure to stressors to determine how quickly these levels return to normal. Times can be recorded in the soldier’s “metacognitive fitness course” to see how much progress is made through training. However, these are not hard metrics, and none corresponds closely to the parameters in the ICD.

available to soldiers, should also help recovery time. It might also cause more soldiers to be seen for routine injuries that they might not otherwise report, according to USASOC personnel. However, due to the varied nature of injuries and the populations participating in THOR³, statistical tests with relatively large numbers of injured soldiers who do and do not participate in THOR³ from similar demographic populations (e.g., soldiers in ODAs who have and have not participated in THOR³) would be needed to perform quantitative assessments. These data are currently not available; rather, available data are used to track individual soldier health rather than to support these types of analyses. Furthermore, it is questionable whether collecting this information would be a good use of already overtaxed THOR³ assets. The satisfaction of soldiers and commanders with THOR³ results, assessed through feedback from THOR³ staff and provided through normal command and staff channels, might be an adequate metric for the program. If so, USSOCOM might choose to adjust the target metrics articulated in its ICD.

SOF-Specific Occupational Health and Safety Capabilities

The third priority capability is “SOF-specific occupational health and safety capabilities.” The parameters are to reduce the likelihood and severity of physical and psychological injury or disease from enemy, occupational, or environmental hazards. As with the second priority area, assessing this capability would require a statistical analysis that depends on significant amounts of data and controls for differing missions and environmental conditions (e.g., injuries experienced in the mountains of Afghanistan may be different in type and severity from those experienced in the Sahel in Africa). Available data do not permit these types of controls and, as noted earlier, are not adequate for this type of analysis. Collecting adequate data would require sophisticated methods and statistical analysis that THOR³ is not currently capable of performing. As with the second priority area, input from THOR³ staff and USASOC commanders might be adequate to judge whether the program is making progress on SOF-specific occupational health and safety capabilities.

Should USASOC want or need more rigorous and quantitative analyses of progress in these areas, it would need to set up sophisticated data collection and statistical analysis capabilities through the Army or USSOCOM operations research community or by contract. If quantitative and scientifically defensible results are desired with respect to the parameters outlined here, efforts similar to those being conducted by the University of Pittsburgh would be very helpful.

Findings and Recommendations

Findings and recommendations for training assessments include the following.

USSOCOM should revise the assessment criteria, and develop appropriate metrics, so that they correspond to best practices in high-level sports and are useful to commanders. It should also ensure that it is not too labor-intensive for the units running these programs to easily collect the appropriate data. In general, the current USSOCOM ICD criteria for the THOR³ program seem arbitrary and are not helpful. They do not form the basis for useful assessments for either USSOCOM staff or USASOC unit commanders. Furthermore, assessing the current criteria in the ICD would be time-consuming and expensive, and such an assessment would not add much to USASOC leaders' understanding of how THOR³ is helping them prepare their soldiers and keep them healthy over their careers in the special operations community.

Progress should be monitored at the individual and small team levels, not across USASOC or the THOR³ program. The latter would require significant resources to do well, and it is not clear that program- or command-wide progress assessment is necessary. Data and input provided to USASOC commanders by THOR³ staff and participating soldiers should provide an adequate assessment from an operational perspective. The elements in each ICD category (e.g., mobility, speed, strength, power, physical endurance) are important for the physical side of human performance. Currently, THOR³ approaches monitoring individual performance and recovery with the goal of helping coaches and medical personnel understand individual needs and create appropriate training and rehabilitation plans. This appears to be an adequate approach, with training and rehabilitation plans developed at the unit level by technically proficient and experienced coaches and medical personnel. If the larger medical or other communities seek to understand how programs like THOR³ could affect medical or training practices in general, more scientific studies should be undertaken.¹³

Unit-level programs should share best practices and analyses with headquarters and other unit programs. This already happens to a significant degree, but a more structured approach could help improve program performance across USASOC and help with the leader and professional development of THOR³ staff.

THOR³ should work with SOCEP to develop assessment protocols as cognitive enhancement specialists are fielded to units. The one element in which there does not appear to be an adequate understanding of assessments is cognitive enhancement. Metrics for measuring cognitive performance are not well developed, though progress can be measured. It is particularly important to develop assessment protocols before cognitive training begins because baseline measurement data will be valuable. The best time to collect these data is when cognitive enhancement specialists are first fielded.

USASOC should periodically ask an external organization in DoD or under contract to conduct independent assessments of the THOR³ program. This organization could also assist in updating or developing new criteria and metrics. Such an initiative would provide USASOC with an objective assessment of THOR³'s efforts that would be impossible for the program alone to provide.

¹³ One such study for the physical aspects of human performance is ongoing: The University of Pittsburgh School of Health and Rehabilitation Sciences is conducting research on this topic. (We interviewed the principal investigator of this effort in January 2012.)

Implications for Doctrine and Policy

The doctrine and policy implications of THOR³ are hard to define at this point in the program's development; it is new and not fully operational, so its effects are not yet clearly understood. In this chapter, we outline the ways in which doctrine and policy could be affected by THOR³ and discuss possible implications. We focus specifically on the Army's physical fitness program and on physical training in general.

The most direct effect that THOR³ might have on Army doctrine and policy will likely be on the Army's physical fitness program. Physical fitness training program requirements are outlined in Army Regulation 350-1, and considerations for soldiers who do not meet minimum standards on the Army Physical Fitness Test (APFT) are addressed in Army regulations on personnel.¹ Guidance for physical fitness training is provided in Army Training Circular 3-22.20, *Army Physical Readiness Training*.² The stated purpose of physical fitness training in these documents is not far from THOR³'s purpose,³ though both sets of guidance primarily address the physical aspects of human performance, and neither includes a physical therapy component or a cognitive enhancement component. Nevertheless, THOR³'s strength and conditioning element has a direct relationship to Army physical fitness training, though it differs in important ways. These differences are what are most likely to have an effect on doctrine and policy.

Army physical fitness training, though focused, in theory, on the same goals as THOR³ strength and conditioning (e.g., strength, flexibility, endurance), differs in that it is designed and administered by soldiers assigned to units performing routine leadership functions rather than by professional coaches, it is assessed by the APFT rather than by standards created specifically for individual soldiers and their upcoming missions, and it is usually focused at the unit level rather than the individual or small team level. The most notable of these differences is that successful physical readiness training under the Army physical fitness training system is not based on progress in a program tailored to the requirements of upcoming missions and overseen by professional coaches. It is this focus (on individuals and mission-tailored fitness programs) and the professional coaches who administer the program that distinguish THOR³ most profoundly from the Army's system.

One of the reasons that a physical fitness program based on individual and small team initiative is possible in THOR³ but not in the larger Army is that Army SOF soldiers, by and

¹ Army Regulation 350-1, *Army Training and Leader Development*, August 4, 2011.

² Headquarters, U.S. Department of the Army, *Army Physical Readiness Training*, Washington, D.C., Training Circular 3-22.20, August 2010.

³ See Army Regulation 350-1, para 1-24b, and TC 3-22.20, para 1-17.

large, are motivated to stay in good physical shape and are not in danger of failing the APFT (which they must take semiannually).⁴ This is not the case for all soldiers in general-purpose units, which is one reason why physical fitness training in these units has a more general focus. A second important reason for the more individual-focused approach in THOR³ is that it has the staff to develop and implement these programs. These factors are not likely to change so that general-purpose units could run THOR³-like programs—if for no other reason than the costs of doing so.

However, while the resources required for a THOR³-like effort are beyond what most Army units could provide, some lessons from the program could affect the way all Army units think about and conduct physical training. It is likely that training tailored to upcoming missions with a greater focus on individual needs could be instituted for some populations in some units. Motivated leaders and incentive systems that support such innovative approaches could provide some tailoring and individual focus. Furthermore, should unit leaders develop more advanced physical fitness programs, such platforms as the PlatoonLeader portal or other online Army networking platforms could—and probably would—be used to spread good practices. This could have a generally beneficial effect on physical fitness training, though it is also possible that bad practices could spread as well. Additionally, there would need to be a shift in emphasis in some commands away from unit average performance on the APFT as an indicator of unit physical fitness because fitness programs tailored to specific tactical missions would not necessarily maximize performance on this test.

To enhance and help supervise such a shift, the Army could also consider providing funds for units (e.g., battalions or brigades) to hire a human performance coach as an adviser and asset to commanders and unit physical program leaders on human performance and program safety. These individuals could not provide the same services to their units as THOR³ coaches can, but they could provide advice and quality control if used properly.

A second effect that THOR³ could have on the way the Army thinks about fitness is through the inclusion of cognitive enhancement programs. Should this aspect of THOR³ prove to be a clear plus for USASOC units and soldiers, it could spur similar programs in non-USASOC Army units. While they would not have the same assets as THOR³ (i.e., dedicated cognitive enhancement specialists in each unit), they could take advantage of this aspect of the Army's comprehensive soldier fitness program, which uses an approach to mental fitness that also is based on the West Point system.⁵ Success in THOR³ could also lead to additional SOCEP-like programs throughout the Army.

It is unlikely that THOR³ will have a direct impact on tactical or operational doctrine. Making such a determination or related recommendations would require much more well-defined results from the program than what is currently available. At this point, we see no changes in tactical doctrine resulting from THOR³.

⁴ We note that this may change somewhat if THOR³ is expanded beyond SFGs, the Ranger Regiment, and the 160th SOAR to include other USASOC units. These additional units have neither the same screening through demanding schools nor the same expectations as the units currently participating in THOR³. Greater command emphasis may be required to ensure that all soldiers meet basic standards.

⁵ Interviews with West Point CEP staff, March 2012.

Findings and Recommendations

THOR³ is an innovative program, created to maximize the effectiveness and longevity of USASOC's major investment: its soldiers. It is designed to increase their ability to perform their jobs both physically and mentally and to return wounded soldiers to duty more quickly by providing high-quality, dedicated physical therapy care. All feedback from THOR³ staff, soldiers participating in the program, and USASOC leaders indicated that these goals are being met, though the data to support these assertions are not yet available. USASOC soldiers take years to develop fully, and a major goal of the program is to help them maintain their physical capabilities for as long as possible after they have reached full professional maturity. Preserving these unique skills in the force for as long as possible is clearly a good investment of time and money. While the logic behind THOR³'s design with respect to increasing the longevity of USASOC soldiers appears to be sound, the program has not been in place long enough to determine whether it will succeed and, if so, to what extent. Despite the absence of adequate data to quantitatively demonstrate that these goals are being achieved, our impression is that they have the potential to be.

To help THOR³ as it continues to improve, we highlight a number of findings and recommendations. We begin by presenting general finding and recommendations, followed by a summary of those from the DOTMLPF-P area discussions in Chapters Two through Five.

General Findings and Recommendations

The following findings and recommendations are of general importance to USASOC and concern all elements of the THOR³ program.

The decision about who participates in THOR³ is a command-level issue and affects funding for personnel, facilities, and equipment. There is a significant difference between how USSOCOM views the decision about which soldiers and units should participate in THOR³ and how that decision is viewed by USASOC leadership and staff. According to USASOC staff, USSOCOM has indicated that the program should be limited to 18-series soldiers who are in SFGs, soldiers in Ranger units, and selected personnel from the 160th SOAR. While USSOCOM has not provided specifics (to our knowledge), restricting participation to this level would have a significant effect on personnel and facilities funding, in particular. USASOC leaders feel that THOR³ should be open to all USASOC soldiers, and they have prepared personnel requests that reflect this.

The degree of decentralization of THOR³ program execution will affect both staffing and how the program operates. Currently, the program operates in an almost completely decentralized

manner. As noted throughout this report, this type of approach is appropriate for some functions (e.g., strength and conditioning) but it is less than ideal in other areas (e.g., cognitive enhancement), at least in the short term. The ability to provide oversight and support, collect and disseminate best practices, develop funding requests for expensive items (such as cognitive enhancement equipment), and conduct assessments will be directly affected by USASOC leadership preferences for how the program is run. Our findings indicate that there are benefits to a decentralized approach if it can be adopted without significant loss of technical functionality. However, the development of program coordinators, oversight of cognitive enhancement (until it is a mature part of THOR³ and accepted by the USASOC community), and, possibly, the performance of certain administrative functions (e.g., best practices and assessments) will require leadership and real capability at the THOR³ headquarters office because USASOC is unlikely to be able to hire fully developed program coordinators.

The current THOR³ headquarters staff will be adequate only if its role is very modest—if it focuses on performing routine administrative tasks and coordinating the program. The headquarters office is not staffed to allow it to perform a substantive oversight role or to provide cross-USASOC management in any significant way (e.g., assessment of unit-level programs, advice or direction on technical matters). USASOC's request for staff includes a THOR³ headquarters office of six staff:

- a program manager (Army civilian)
- subject-matter experts in strength and conditioning, physical therapy, and dietetics (Army civilians)
- an administrative specialist (Army civilian)
- a data manager (contractor).

This structure will likely be adequate, with the possible exception of oversight for cognitive enhancement.

Finally, we note that one important element of USASOC is not included in THOR³ or this analysis: the reserve component. To the extent that reserve SOF soldiers are part of future operational plans, there should be a way to provide them with best practices and lessons learned from THOR³, if not full access to training and facilities.

DOTMLPF-P Findings and Recommendations

The following findings and recommendations address each component across the range of the Army's DOTMLPF-P domains.

Organization

Findings and recommendations regarding organization address both requirements for personnel of a certain type and the structure of the program. Together, these two components define the program and what it can do.

Requirements Validation and Articulation

Properly articulated and validated requirements define the capabilities of the program, provide clear guidance on the roles of all players, help with hiring and retaining the right people,

and provide needed information for the administration of the program. Findings and recommendations that should help USASOC and the THOR³ headquarters office in this area are as follows:

- The THOR³ headquarters staff should clearly and carefully validate and articulate requirements for the unit-level program offices, which will assist it in more effectively administering the program. These requirements should be meaningful to those administering the program at the unit level and based on detailed job analyses.
- Requirements for the THOR³ headquarters office should be tied to the USASOC leadership's expectations for THOR³ and the implied role of the headquarters office (e.g., the program's level of decentralization, the ability to share best practices across the command).
- At the unit level, the need for well-defined requirements is most evident with respect to cognitive enhancement specialists; program coordinators' perceptions of the need for these specialists are very different from those of the headquarters office.
- Requirements must be periodically reviewed and updated.

Structure

Along with validated requirements, the structure of the program is critical to determining its capabilities. Key findings and recommendations in this area include the following:

- The THOR³ headquarters office is understructured for all but the most minimum functions and should be expanded as planned if the USASOC leadership expects it to provide direction and oversight for the program.
- We recommend a thorough manpower analysis to forecast expected workloads and thus inform structure and staffing requirements.

Personnel

Given an adequate structure, the next question is whether THOR³ can attract and retain the right people to run the program in the right numbers. This includes the ability to define positions in ways that will permit USASOC's human resource managers to attract high-quality applicants and screen out inadequate ones. Another consideration is whether program staff should be Army civilians or contractors. Our findings and recommendations in this area are as follows:

- The total number of personnel that the THOR³ program has requested appears adequate.
- Each specialty area in each supported O-6-level unit should have at least one Army civilian to provide continuity and understanding of the supported unit.
- THOR³ should have a personnel services contract that permits it to hire additional specialists to accommodate fluctuations in demand, as well as for special and temporary training or other needs.
- The mix of Army civilians to contractors should balance the command's preference for a stable, permanent workforce with flexibility in staffing levels (which is useful for controlling personnel costs—a necessity given the fluctuating client base in these units as a result of frequent deployments).

- USASOC should work with USSOCOM to perform a detailed job analysis of program coordinator and strength and conditioning coach positions to better categorize requirements under the GS-0601 job series in the short term, and it should pursue a new job series for these specialties in the long term.
- USASOC should not rush to request direct hiring authority; it does not meet the requirements, and creating a special job series for human performance coordinators and strength and conditioning coaches may solve the problem in the long term.
- USASOC should monitor the labor market for all THOR³ specialties and consider hiring and retention bonuses for fields in which staff have multiple, lucrative options.

Leader Development and Education

The THOR³ program currently has no formal ability to develop its leaders or provide education for its staff. This responsibility is left on the individual staff member and the unit-level program coordinator. This is common practice for medical personnel who must keep current on their technical skills. However, this does not prepare program coordinators and other staff for supervisory positions.

Our specific findings and recommendations for leader development and education are as follows:

- THOR³ needs to develop its program coordinators in three critical ways:
 - Ensure that they understand the purpose for and how best to use the four types of specialists who make up their teams; this should be a priority. USASOC's SOCEP can help THOR³ headquarters develop such a program.
 - Ensure that they are able to supervise the delivery of medical care with support from unit medical personnel and the MTF. USASOC medical personnel in the Office of the Deputy Chief of Staff, Surgeon, and at the unit level can help develop and implement such training.
 - Ensure that they are able to supervise much larger staffs than they currently have—in some cases, in more than one location. This is a standard supervisory capability that THOR³ headquarters and supported unit personnel can assist in developing.
- THOR³ program coordinators should monitor the currency of the professional credentials of their strength and conditioning staff, and THOR³ headquarters staff should monitor the currency of the program coordinators.

Facilities

USSOCOM has determined (though not published) criteria for human performance program facilities. None of USASOC's facilities currently meet this standard, though the 1st SFG facility comes close. To address this shortfall, we offer the following findings and recommendations:

- Each USASOC unit that has been authorized a THOR³ program should have a training facility that meets USSOCOM standards, and, accordingly, USASOC should submit military construction requests to USSOCOM.
- SFGs, Ranger Regiment units, and 160th SOAR should be given top priority for THOR³ facilities, with the 160th first in line due to the tornado damage its facilities sustained in 2011.

- Facilities for USASFC, 4th Military Information Support Group, 95th Civil Affairs Brigade, 528th Sustainment Brigade, and 112th Signal Battalion should be built to coincide with the creation of their THOR³ programs.
- A new facility for SWCS should be built after all unit facilities are in place.
- While USASOC requests military construction funds to build new facilities, it also should examine the use of temporary facilities to fill shortfalls.
- USASOC should adopt a USR-like assessment framework to track the adequacy of its facilities and make their status known to USSOCOM.

Materiel

Of the areas examined in this research, materiel considerations pose the fewest problems for USASOC. The current decentralized approach to purchasing equipment seems to work well. The one potential concern is cognitive enhancement equipment. The following findings and recommendations address the THOR³ program's materiel needs:

- USASOC should continue to let subordinate units enjoy autonomy when it comes to materiel identification and acquisition for the physical side of THOR³.
- For the mental side of human optimization (cognitive enhancement), the THOR³ headquarters office should provide subordinate units with assistance in equipment selection.
- Lessons from SOCEP and USSOCOM guidelines should be used in developing equipment requirements.
- THOR³ headquarters should help units develop funding requests for cognitive enhancement equipment in tandem with fielding cognitive enhancement specialists at the unit level; the equipment and specialists are quite expensive, and supported units may need assistance to pay for them.
- No formal assessments of materiel are needed.

Training Assessment

The USSOCOM documents that govern performance expectations for THOR³ are unrealistic, and the USSOCOM staff recognizes this. Developing assessment protocols to demonstrate that THOR³ is meeting these expectations is not in the best interest of USASOC. Our specific recommendations are as follows:

- USSOCOM should revise the assessment criteria, and develop appropriate metrics, so that they correspond to best practices in high-level sports and are useful to commanders. USSOCOM should also ensure that it is not too labor-intensive for the units running these programs to easily collect the appropriate data.
- Progress should be monitored at the individual and small team levels, not across USASOC or the THOR³ program as a whole. Program- or command-wide progress assessment would require significant resources to do well, and soldiers in different units have different needs, further complicating such a task.
- THOR³ should work with SOCEP to develop assessment protocols as cognitive enhancement specialists are fielded to units.
- USASOC should periodically ask an external organization in DoD or under contract to conduct independent assessments of the THOR³ program; this organization could also assist in updating or developing new criteria and metrics.

Doctrine and Policy

Little can be said about the doctrine or policies that THOR³ could affect. However, if it did have such an impact, it would most likely be in the way that the Army conducts physical fitness training overall. Good practices from THOR³ should be replicated throughout the Army to the extent that this can be done safely without a large, professional coaching staff to supervise physical training.

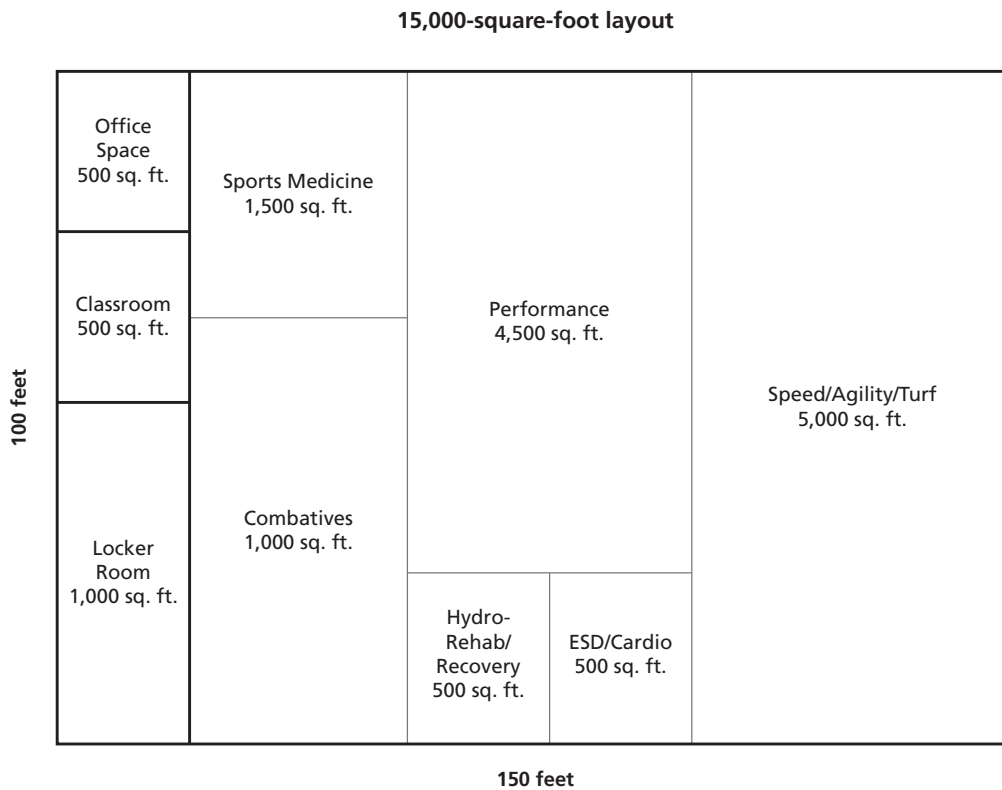
Final Observations

THOR³ is an innovative program that is intended to support the development and maintenance of USASOC's most important—and hard-to-create—asset: SOF soldiers. Despite the absence of adequate data to quantitatively demonstrate that its goals are being achieved, the logic behind the program's design appears to be sound. The Army should consider conducting further research into a THOR³-like program for reserve-component forces, along with longitudinal research and assessments of how such an initiative could be more useful to broader communities of interest (such as the military medical community and the U.S. Army in general).

USSOCOM Planning Template for Small and Large THOR³ Facilities

This appendix presents USSOCOM’s templates for small (15,000-square-foot) and large (40,000-square-foot) facilities. They are guidelines for its subordinate commands to use in their planning and were provided to the RAND study team by USSOCOM staff in January 2012. A small facility is meant to serve a population of up to 1,000 soldiers, and a large facility a population of more than 3,000 soldiers, according to USSOCOM guidelines.¹

Figure A.1
Small Facility Template



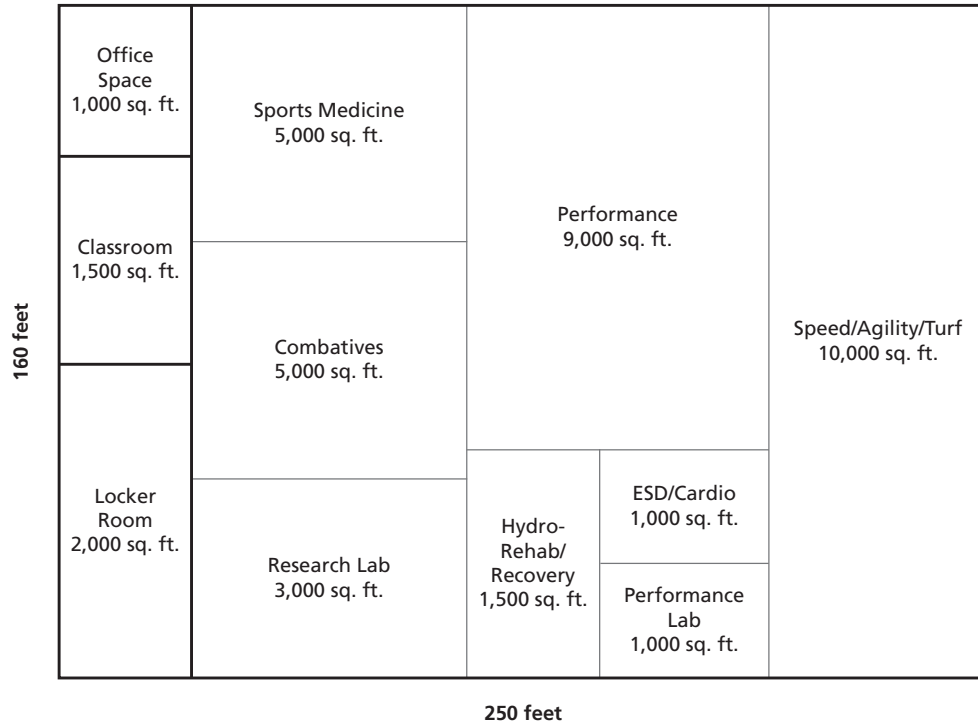
NOTE: ESD = energy system development.

RAND TR1309-A.1

¹ Guidelines were provided to RAND in notes, as well as in a USSOCOM briefing created by its Human Performance Program Office (“Human Performance Program Facilities Update,” November 30, 2011). It should be noted that the guidelines were applied to anticipated unit training routines to derive these numbers. To our knowledge, there is no USSOCOM regulation or policy document that formalizes these criteria.

Figure A.2
Large Facility Template

40,000-square-foot layout



USSOCOM Materiel Requirements

This appendix provides the standard materiel requirements stipulated by USSOCOM for the human optimization and rapid recovery programs it sponsors. THOR³ is one of these programs. These requirements are presented in Tables B.1–B.14 in the context of the size of the facility, which, in turn, depends on the number of soldiers in the unit.

Table B.1
Cardio Equipment for a Small Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
4	Woodway Desmo Pro treadmill	6,873	27,492
2	Speed board	5,225	10,450
4	Rower	973	3,892
1	VersaClimber (3 multistation configuration)	10,625	10,625
2	Elliptical machine	2,500	5,000
2	Jacob's Ladder	2,725	5,450
Total			62,909

NOTE: Prices are rounded to the nearest dollar.

Table B.2
Human Performance Weight Training Equipment for a Small Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
8	9-foot power rack	2,699	21,592
8	Power rack band attachments	299	2,392
4	6- by 8-foot Olympic platform	1,699	6,796
8	Reverse Rhino hook bar catches	199	1,592
2	Belt squat	2,599	5,198
2	VMO (vastus medialis oblique) developer	399	798
2	Full-body squat apparatus	4,299	8,598

Table B.2—Continued

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
2	Reverse back extension apparatus	2,099	4,198
2	Hamstring/glute bench	1,599	3,198
1	3-tier medicine ball rack	899	899
1	Band and chain storage rack	699	699
8	Lever-action bench	1,399	11,192
4	Multiangle dumbbell bench	999	3,996
2	Decline dumbbell bench	999	1,998
2	Bumper plate racks (small)	260	520
3	Bumper plate racks (large)	280	840
5	3-tier dumbbell rack	1,100	5,499
4	Freestanding chalk bowl	249	996
8	Rack dip attachment	299	2,392
2	Rack dip attachment storage unit	699	1,398
2	9-bar vertical storage unit	249	498
1	Mastiff 2-inch-thick bar	150	150
1	Mastiff 2 3/8-inch-thick bar	180	180
1	Mastiff 3-inch-thick bar	290	290
12	Uesaka 20-kg training bar	740	8,880
12	Uesaka 25-lb bumper plate	194	2,328
12	Uesaka 35-lb bumper plate	224	2,688
36	Uesaka 45-lb bumper plate	244	8,784
12	Diamond rubber 10-lb bumper plate	45	540
2	Ader 9-lb kettlebell	30	60
2	Ader 13-lb kettlebell	40	80
2	Ader 18-lb kettlebell	50	100
4	Ader 26-lb kettlebell	55	220
4	Ader 35-lb kettlebell	65	260
4	Ader 44-lb kettlebell	70	280
4	Ader 53-lb kettlebell	80	320
2	Ader 62-lb kettlebell	90	180
2	Ader 70-lb kettlebell	100	200
2	Ader 80-lb kettlebell	115	230

Table B.2—Continued

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
1	Ader 88-lb kettlebell	130	130
1	Ader 97-lb kettlebell	145	145
3 sets	5- to 50-lb urethane dumbbells	3,003	9,009
3 sets	55- to 100-lb urethane dumbbells	4,741	14,223
3 sets	105- to 150-lb urethane dumbbells	6,479	19,437
2 sets	20- to 110-lb urethane barbells	3,080	6,160
2	Barbell rack	485	970
16	2.5-lb urethane plate	6	96
16	5-lb urethane plate	11	176
24	10-lb urethane plate	22	528
24	25-lb urethane plate	54	1,296
24	35-lb urethane plate	76	1,824
72	45-lb urethane plate	98	7,056
2	Speed board	5,225	10,450
4	Rower	973	3,893
Total			186,451

NOTE: Prices are rounded to the nearest dollar.

**Table B.3
Human Performance Miscellaneous Equipment for a Small Facility**

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
15	Foam roller, 3 feet long/6 inches round	18	270
30	Foam roller, 1 foot long/6 inches round	9	270
10	Stretch strap	13	130
4	First Place 4-lb medicine ball	21	84
4	First Place 6-lb medicine ball	27	108
4	First Place 8-lb medicine ball	37	148
6	First Place 10-lb medicine ball	47	282
6	First Place 12-lb medicine ball	50	300
6	First Place 15-lb medicine ball	60	360
6	First Place 18-lb medicine ball	69	414

Table B.3—Continued

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
6	First Place 20-lb medicine ball	79	474
6	First Place 25-lb medicine ball	87	522
6	First Place 30-lb medicine ball	95	570
4	Dynamax Stout 12-lb medicine ball	75	300
4	Dynamax Stout 14-lb medicine ball	82	328
4	Dynamax Hefty 16-lb medicine ball	90	360
4	Dynamax Hefty 18-lb medicine ball	95	380
4	Dynamax Burly 20-lb medicine ball	95	380
4	ABC Speed/Agility Ladder	75	300
24	12-inch cone	6	144
3	12-inch saucer cones	22	66
12	6-inch Banana Steps	7	168
24	12-inch Banana Steps	7	168
12	18-inch Banana Steps	11	132
12	24-inch Banana Steps	13	156
4	20-lb weighted vest	160	640
4	40-lb weighted vest	199	796
4	84-lb weighted vest	280	1,120
6	Slastix All-Purpose Pro resistance bands (medium)	28	168
6	Slastix All-Purpose Pro resistance bands (heavy)	28	168
6	Slastix All-Purpose Pro resistance bands (extra heavy)	29	174
6	Slastix All-Purpose Pro resistance bands (super heavy)	31	186
12	Mobility Arch	250	3,000
3	King Crab Sled (blue)	299	897
3	Crab Sled (blue)	199	597
6	Belt harness	30	180
6	Shoulder harness	30	180
2	Just Jump/Vertec vertical jump test apparatus	500	1,000
1	Miscellaneous	2,500	2,500
4	Functional trainer	4,045	16,180

Table B.3—Continued

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
4	Stand for trainer	1,110	4,440
1	Infinity 6-pack frame	1,095	1,095
6	Infinity 6-pack attachments	3,535	21,210
1	Air compressor	2,240	2,240
6	Accessory pack	308	1,846
Total			65,431

NOTE: Prices are rounded to the nearest dollar.

**Table B.4
Testing and Evaluation Equipment (Human Performance and Sports Medicine) for a Small Facility**

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
1	Woodway Desmo treadmill	6,873	6,873
1	Cosmed Fitmate Pro cardiopulmonary testing apparatus	7,900	7,900
1	NeuroCom Balance Manager SMART EquiTest system	84,072	84,072
1	Static 18- by 60-inch force plate	7,473	7,473
1	InVision Package	12,500	12,500
1	Bod Pod Gold Standard Body Composition Tracking System	39,695	39,695
1	Fusion Chart	449	449
Total			158,962

NOTE: Prices are rounded to the nearest dollar.

**Table B.5
Sports Medicine Equipment for a Small Facility**

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
4	Treatment table	1,500	6,000
2	Mechanical traction table	6,000	12,000
1	Hydroculator	3,000	3,000
1	Ice machine	7,000	7,000

Table B.5—Continued

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
4	E-Stim/ultrasound combo unit	5,000	20,000
6	Game Ready cryotherapy unit	3,000	18,000
1	Hi-lo mat table	1,500	1,500
1	HydroWorx 2000-series pool with treadmill	270,000	270,000
1	HydroWorx PolarPlunge-series pool	25,000	25,000
1	HydroWorx ThermalPlunge-series pool	22,000	22,000
GR	Treatment tables wedges/tumble forms	3,000	3,000
1	Hand dynamometer	500	500
1	Shortwave diathermy unit	3,000	3,000
GR	Physical measurement tools (e.g., goniometer)	1,000	1,000
2	Iontophoresis unit	1,000	2,000
1	Paraffin bath	500	500
1	Shuttle leg press	5,000	5,000
1	AlterG antigravity treadmill	75,000	75,000
1	Biodex isokinetic dynamometer	65,000	65,000
1	Bike	1,500	1,500
1	Functional trainer	4,000	4,000
1	Biodex balance system	10,000	10,000
4	Pneumatic compression unit	4,500	18,000
GR	Cuff weights (assorted)	1,000	1,000
GR	Dumbbells (assorted, 1–20 lb)	1,000	1,000
GR	Medicine balls (assorted, 1–25 lb)	500	500
4	Stool	750	3,000
1	Freezer	500	500
1	Slant board	150	150
GR	Stackable steps	1,000	1,000
GR	Balance pads (assorted)	1,000	1,000
GR	Slide boards	2,500	2,500
Total			583,650

NOTE: GR = gross quantity. Prices are rounded to the nearest dollar.

Table B.6
Sports Medicine Supplies for a Small Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
GR	Theraband tubing (assorted)	5,000	5,000
GR	Resistance bands (assorted)	2,000	2,000
4	Bosu ball	200	800
GR	Exercise balls/Swiss balls (assorted)	500	500
GR	Upper-extremity therapeutic exercise items (assorted)	1,000	1,000
GR	Hydrocollator packs (assorted)	1,000	1,000
GR	Hydrocollator covers (assorted)	1,500	1,500
GR	Taping supplies (assorted)	5,000	5,000
GR	Wound care supplies (assorted)	5,000	5,000
GR	Bracing supplies (assorted upper and lower extremity)	10,000	10,000
GR	Padding (assorted)	1,500	1,500
GR	E-stim electrodes (assorted)	2,500	2,500
Total			35,800

NOTE: Prices are rounded to the nearest dollar.

Table B.7
“Mind Gym” (Sports Psychology) Equipment for a Small Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 15,000-square-foot facility
1	Nike SST Sensory Station	72,000	72,000
1	Dynavision iSpan	5,500	5,500
2	Interactive metronome	2,400	4,800
10	ProComp Infiniti biofeedback system (software, hardware, headset/visor sensor)	7,000	70,000
10	Laptop (large screen, fully equipped for handling all software)	1,800	18,000
10	EmWave2 coherence software	295	2,950
30	Nike Strobe sensory training glasses	250	7,500
1	Weapon laser simulator (visual acuity skill transfer)	98,000	98,000
1	CogniSens NeuroTracker	50,000	50,000
Total			328,750

NOTE: Prices are rounded to the nearest dollar.

Table B.8
Cardio Equipment for a Large Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
8	Woodway Desmo Pro treadmill	6,873	54,984
4	Speed board	5,225	20,900
8	Rower	973	7,784
2	VersaClimber (3 multistation configuration)	10,625	21,250
4	Elliptical machine	2,500	10,000
4	Jacob's Ladder	2,725	10,900
Total			125,818

NOTE: Prices are rounded to the nearest dollar.

Table B.9
Human Performance Weight Training Equipment for a Large Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
16	9-foot power rack	2,699	43,184.00
16	Power rack band attachments	299	4,784.00
6	6- by 8-foot Olympic platform	1,699	10,194.00
8	Reverse Rhino hook bar catches	199	1,592.00
2	Belt squat	2,599	5,198.00
2	VMO (vastus medialis oblique) developer	399	798.00
2	Full-body squat apparatus	4,299	8,598.00
2	Reverse back extension apparatus	2,099	4,198.00
4	Hamstring/glute bench	1,599	6,396.00
1	3-tier medicine ball rack	899	899.00
1	Band and chain storage rack	699	699.00
16	Lever-action bench	1,399	22,384.00
4	Multiangle dumbbell bench	999	3,996.00
2	Decline dumbbell bench	999	1,998.00
2	Bumper plate racks (small)	260	520.00
3	Bumper plate racks (large)	280	840.00
5	3-tier dumbbell rack	1,100	5,499.00
4	Freestanding chalk bowl	249	996.00
8	Rack dip attachment	299	2,392.00

Table B.9—Continued

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
2	Rack dip attachment storage unit	699	1,398.00
2	9-bar vertical storage unit	249	498.00
1	Mastiff 2-inch-thick bar	150	150.00
1	Mastiff 2 3/8-inch-thick bar	180	180.00
1	Mastiff 3-inch-thick bar	290	290.00
20	Uesaka 20-kg training bar	740	14,800.00
24	Uesaka 25-lb bumper plate	194	4,656.00
24	Uesaka 35-lb bumper plate	224	5,856.00
72	Uesaka 45-lb bumper plate	244	17,568.00
24	Diamond rubber 10-lb bumper plate	45	1,080.00
2	Ader 9-lb kettlebell	30	60
2	Ader 13-lb kettlebell	40	80
2	Ader 18-lb kettlebell	50	100
4	Ader 26-lb kettlebell	55	220
4	Ader 35-lb kettlebell	65	260
4	Ader 44-lb kettlebell	70	280
4	Ader 53-lb kettlebell	80	320
2	Ader 62-lb kettlebell	90	180
2	Ader 70-lb kettlebell	100	200
2	Ader 80-lb kettlebell	115	230
1	Ader 88-lb kettlebell	130	130
1	Ader 97-lb kettlebell	145	145
3 sets	5- to 50-lb urethane dumbbells	3,003	9,009
3 sets	55- to 100-lb urethane dumbbells	4,741	14,223
3 sets	105- to 150-lb urethane dumbbells	6,479	19,437
2 sets	20- to 110-lb urethane barbells	3,080	6,160
2	Barbell rack	485	970
32	2.5-lb urethane plate	6	192
32	5-lb urethane plate	11	352
48	10-lb urethane plate	22	1,056
48	25-lb urethane plate	54	2,592
48	35-lb urethane plate	76	3,648

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
144	45-lb urethane plate	98	14,112
Total			245,596

NOTE: Prices are rounded to the nearest dollar.

Table B.10
Human Performance Miscellaneous Equipment for a Large Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
15	Foam roller 3 feet long/6 inches round	18	270
30	Foam Roller 1 foot long/6 inches round	9	270
10	Stretch strap	13	130
4	First Place 4-lb medicine ball	21	84
4	First Place 6-lb medicine ball	27	108
4	First Place 8-lb medicine ball	37	148
6	First Place 10-lb medicine ball	47	282
6	First Place 12-lb medicine ball	50	300
6	First Place 15-lb medicine ball	60	360
6	First Place 18-lb medicine ball	69	414
6	First Place 20-lb medicine ball	79	474
6	First Place 25-lb medicine ball	87	522
6	First Place 30-lb medicine ball	95	570
4	Dynamax Stout 12-lb medicine ball	75	300
4	Dynamax Stout 14-lb medicine ball	82	328
4	Dynamax Hefty 16-lb medicine ball	90	360
4	Dynamax Hefty 18-lb medicine ball	95	380
4	Dynamax Burly 20-lb medicine ball	95	380
4	ABC Speed/Agility Ladder	75	300
24	12-inch cone	6	144
3	12-inch saucer cones	22	66
24	6-inch Banana Steps	7	68
24	12-inch Banana Steps	7	168
12	18-inch Banana Steps	11	132
12	24-inch Banana Steps	13	156
4	20-lb weighted vest	160	640

Table B.10—Continued

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
4	40-lb weighted vest	199	796
4	84-lb weighted vest	280	1,120
6	Slastix All-Purpose Pro resistance bands (medium)	28	168
6	Slastix All-Purpose Pro resistance bands (heavy)	28	168
6	Slastix All-Purpose Pro resistance bands (extra heavy)	29	174
6	Slastix All-Purpose Pro resistance bands (super heavy)	31	186
24	Mobility Arch	250	6,000
6	King Crab Sled (blue)	299	1,794
6	Crab Sled (blue)	199	1,194
12	Belt harness	30	360
12	Shoulder harness	30	360
2	Just Jump/Vertec vertical jump test apparatus	500	1,000
1	Miscellaneous	2,500	2,500
4	Functional trainer	4,045	16,180
4	Stand for trainer	1,110	4,440
1	Infinity 6-pack frame	1,095	1,095
6	Infinity 6-pack attachments	3,535	21,210
1	Air compressor	2,240	2,240
6	Accessory pack	308	1,846
Total			70,285

NOTE: Prices are rounded to the nearest dollar.

Table B.11
Testing and Evaluation Equipment (Human Performance and Sports Medicine) for a Large Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
2	Woodway Desmo treadmill	6,873	13,746
1	Force 2.0 treadmill	45,000	45,000
2	Parvo metabolic cart	25,000	50,000
1	NeuroCom Balance Manager SMART EquiTest System	84,072	84,072
1	Static 18- by 60-inch force plate	7,473	7,473
1	InVision Package	12,500	12,500
1	Bod Pod Gold Standard Body Composition Tracking System	39,695	39,695
1	Fusion Chart	449	449
Total			252,935

NOTE: Prices are rounded to the nearest dollar.

Table B.12
Sports Medicine Equipment for a Large Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
4	Treatment table	1,500	6,000
2	Mechanical traction table	6,000	12,000
1	Hydroculator	3,000	3,000
1	Ice machine	7,000	7,000
4	E-stim/ultrasound combo unit	5,000	20,000
6	Game Ready cryotherapy unit	3,000	18,000
1	Hi-lo mat table	1,500	1,500
1	HydroWorx 2000-series pool with treadmill	270,000	270,000
1	Hydro Worx PolarPlunge series pool	25,000	25,000
1	HydroWorx ThermalPlunge-series pool	22,000	22,000
GR	Treatment table wedges/tumble forms	3,000	3,000
1	Hand dynamometer	500	500
1	Shortwave diathermy unit	3,000	3,000
GR	Physical measurement tools (e.g., goniometer)	1,000	1,000

Table B.12—Continued

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
2	Iontophoresis unit	1,000	2,000
1	Paraffin bath	500	500
1	Shuttle leg press	5,000	5,000
1	AlterG antigravity treadmill	75,000	75,000
1	Biodex isokinetic dynamometer	65,000	65,000
1	Bike	1,500	1,500
1	Functional trainer	4,000	4,000
1	Biodex balance system	10,000	10,000
4	Pneumatic compression unit	4,500	18,000
GR	Cuff weights (assorted)	1,000	1,000
GR	Dumbbells (assorted, 1–20 lb)	1,000	1,000
GR	Medicine balls (assorted, 1–25 lb)	500	500
4	Stool	750	3,000
1	Freezer	500	500
1	Slant board	150	150
GR	Stackable steps	1,000	1,000
GR	Balance pads (assorted)	1,000	1,000
GR	Slide boards	2,500	2,500
Total			583,650

NOTE: Prices are rounded to the nearest dollar.

Table B.13
Sports Medicine Supplies for a Large Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
GR	Theraband tubing (assorted)	5,000	5,000
GR	Resistance bands (assorted)	2,000	2,000
4	Bosu ball	200	800
GR	Exercise balls/Swiss balls (assorted)	500	500
GR	Upper-extremity therapeutic exercise items (assorted)	1,000	1,000
GR	Hydrocollator packs (assorted)	1,000	1,000
GR	Hydrocollator covers (assorted)	1,500	1,500
GR	Taping supplies (assorted)	5,000	5,000
GR	Wound care supplies (assorted)	5,000	5,000
GR	Bracing supplies (assorted upper and lower extremity)	10,000	10,000
GR	Padding (assorted)	1,500	1,500
GR	E-stim electrodes (assorted)	2,500	2,500
Total			35,800

NOTE: Prices are rounded to the nearest dollar.

Table B.14
"Mind Gym" (Sports Psychology) Equipment for a Large Facility

Quantity	Description	Unit Price (\$)	Total Price (\$) for a 40,000-square-foot facility
2	Nike SST Sensory Station	72,000	144,000
2	Dynavision iSpan	5,500	11,000
2	Interactive metronome	2,400	4,800
15	ProComp Infiniti biofeedback system (software, hardware, headset/visor sensor)	7,000	105,000
15	Laptops (large screen, fully equipped for handling all software)	1,800	27,000
30	EmWave2 coherence software	295	8,850
30	Nike Strobe sensory training glasses	250	7,500
1	Weapon laser simulator (visual acuity skill transfer)	98,000	98,000
2	CogniSens NeuroTracker	50,000	100,000
Total			506,150

NOTE: Prices are rounded to the nearest dollar.

Site Visits

October 13, 2012	THOR³ Headquarters, 3rd SFG, and SWCS THOR ³ headquarters staff 3rd SFG ODA members participating in THOR ³ 3rd SFG THOR ³ staff SWCS THOR ³ staff
December 21, 2012	USSOCOM Surgeon's Office Human Performance Program staff
January 17, 2012	U.S. Air Force Academy Physical and occupational therapy staff Human Performance Lab/strength and conditioning staff
January 18, 2012	Olympic Training Facility Site tour
January 25, 2012	THOR³ Headquarters and SWC Facility THOR ³ headquarters staff SWCS facilities tour
February 10, 2012	1st SFG Members of the SFG and subordinate battalion command groups THOR ³ staff
February 13, 2012	Ranger Regiment THOR ³ staff
February 14, 2012	5th SFG Members of the command group THOR ³ staff
February 14, 2012	160th SOAR Members of the command group THOR ³ staff
March 15, 2012	THOR³ Headquarters and ACE I THOR ³ headquarters staff ACE I Human Performance Program and physical therapy staff

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In 2009, U.S. Special Operations Command provided U.S. Army Special Operations Command with funds to establish the Tactical Human Optimization, Rapid Rehabilitation and Reconditioning (THOR³) program, an investment reflecting “truth number 1” of special operations forces: “Humans are more important than hardware.” The goals of THOR³ are to increase the physical and mental capabilities of Army special forces, help these soldiers recover more rapidly from injuries sustained in combat or training, and help them stay healthy and able to contribute longer. The program differs from existing Army fitness programs in several important ways, including its holistic approach to improving physical and mental performance, its focus on individual and unit needs, and its reliance on a professional staff of program coordinators, strength and conditioning coaches, physical therapists, dietitians, and cognitive enhancement specialists to deliver training and rehabilitation services that are on par with those provided to professional sports teams. U.S. Army Special Operations Command asked RAND Arroyo Center to determine whether THOR³ is effectively utilizing the resources provided and to identify opportunities for improvement in the program’s planning and implementation, staffing (including hiring and retention), leader development and education, facility and equipment requirements, and ability to support participating personnel.



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