

NATIONAL INVESTIGATION OF ADHERENCE TO ACSM'S PRE-ACTIVITY SCREENING PROCEDURES IN FITNESS FACILITIES

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Abstract: Pre-activity health screening procedures (PHSP) are important for fitness professionals to minimize the risk of sudden cardiac death (SCD) and acute myocardial infarction (AMI) in new exercise participants. PHSP can identify individuals who may be at increased risk for these events and allow for appropriate interventions to be taken.

Keywords: PHSP, SCD, AMI, exercise, risk, screening

1. Introduction

It is well established in the literature that the morbidity and mortality rates due to chronic illnesses such as cardiovascular (CV) disease and diabetes in the U.S. are alarmingly high.

Numerous studies also exist to demonstrate that participation in regular physical activity can be effective in the prevention and control of many chronic illnesses and other medical conditions (“Physical Activity”, 2008). Although the benefits of regular exercise outweigh the risks, the risk of untoward events, e.g., sudden cardiac death (SCD) and acute myocardial infarction (AMI) do exist (Thompson, et al., 2007). It is important for fitness professionals to take precautions to minimize these risks in the design and delivery of exercise programs. These precautions include having new participants (individuals who, for the first time, join a fitness facility as a member or participate in a program offered by the facility) complete pre-activity health screening procedures (PHSP) prior to initiating an exercise program, as required and/or recommended by several professional organizations including the American College of Sports Medicine (ACSM). A major purpose of conducting PHSP is to identify individuals who may be at increased risk (“at risk”) for SCD or AMI during exercise.

The ACSM has three publications that provide standards (requirements) and/or guidelines (recommendations) for fitness facilities to follow when developing and implementing various safety practices into the daily operations of a fitness facility including PHSP. These are: (a) *ACSM’s Guidelines for Exercise Testing and Prescription (ACSM’s GETP)* (Pescatello, Arena, Riebe, & Thompson, 2014), (b) *ACSM’s Health/Fitness Facility Standards and Guidelines (ACSM’s Standards)* (Tharrett & Peterson, 2012), and (c) *Recommendations for Cardiovascular Screening, Staffing, and Emergency Policies at Health/Fitness Facilities*, a joint position statement by the American Heart Association and ACSM (*AHA/ACSM Joint PS*) (Balady et al. 1998). Although the specific required and/or recommended practices for PHSP vary among the three ACSM publications, all of them describe two basic steps. The first is to have new participants complete a screening device (a form that asks about medical conditions such as CV disease and/or CV risk factors) and then based on the data obtained; determine if the

individual is “at risk” for SCD or AMI. The second step is to refer an “at risk” individual to his/her medical care provider for a medical exam, exercise test, consultation, or clearance prior to initiating an exercise program. Following these steps can increase the safety for new participants by mitigating the risk of SCD or AMI during exercise.

Both SCD and AMI events do occur in fitness facilities (Abbott, 2013; Eickhoff-Shemek, Herbert, & Connaughton, 2009). Previous research by McInnis, Hayakawa, and Balady (1997) and Herbert, et al. (2007) found that 17% and 27%, respectively, of the facilities investigated in these studies had at least one CV medical emergency in the last five years. In the present study, 35% of the facilities had at least one CV medical emergency in the last five years (Craig, 2014). Unfortunately, when a SCD or an AMI occurs in a fitness facility, a negligence lawsuit often follows (Abbott, 2013).

Several negligence claims are made against the facility in these lawsuits and include the failure to conduct pre-activity health screening such as (a) the club failed to require prescreening of members to assess fitness and health prior to use of the facility (*Chai v. Sport & Fitness Clubs of America*, 1999) and (b) the club failed to properly screen the decedent’s health (*L.A. Fitness International, LLC v. Julianna Tringali Mayer*, 2008).

Negligence claims against fitness facilities also include the failure to adhere to safety standards and guidelines published by professional organizations (Eickhoff-Shemek et al., 2009; Voris & Rabinoff, 2011).

In negligence lawsuits, expert witnesses often refer to standards/guidelines published by ACSM and other professional organizations to educate the court as to the duty (or standard of care) the defendant (e.g., the facility) owed to the plaintiff, the injured party (Voris & Rabinoff, 2011). If the conduct of the defendant is consistent with the standard of care, it will be difficult for the plaintiff to prove a breach of duty, and thus can protect the facility from being found liable (Eickhoff-Shemek, et al., 2009). However, if the conduct is inconsistent with the standard of care, it will be easier for the plaintiff to prove a breach of duty which can lead to a ruling of negligence against the defendant. Therefore, it is important that fitness facilities conduct PHSP not only to enhance participant safety by minimizing the risk of SCD/AMI but also help avoid costly negligence lawsuits for not adhering to the standard of care when a SCD/AMI occurs.

Six previous studies between 1997 and 2009 investigated PHSP in fitness facilities: (1) Eickhoff-Shemek & Deja, 2002a and Eickhoff-Shemek & Deja, 2002b, (2) Herbert et al., 2007, (3) McInnis et al., 1997, (4) McInnis et al., 2001, (5) Morrey, Finnie, Hensrud, & Warren, 2002, and (6) Springer, Eickhoff-Shemek, & Zuberbuehler, 2009a and Springer, Eickhoff-Shemek & Zuberbuehler, 2009b. These studies were limited in the number and types of variables investigated, e.g., they primarily determined if facilities required new participants to complete a screening device and if they required medical clearance for “at risk” participants. The present study not only investigated these variables, but many other variables to provide a comprehensive analysis of PHSP in fitness facilities. For example, one of the purposes of this study was to determine if the detailed screening criteria in the ACSM’s *GETP* were used in the development and implementation of the facility’s PHSP and if so, to what extent. Although some changes have occurred, the screening procedures in the current 9th edition of ACSM’s *GETP* have been virtually the same since its third edition published 30 years ago (Blair, et al., 1986). However, no previous studies have investigated if fitness facilities are following these recommended screening procedures. Currently,

significant changes are being proposed with these screening procedures for the next edition (10th) of *ACSM's GETP* to be published in 2017. A paper describing these changes and the rationale for them was recently published in *ACSM's Medicine & Science in Sports & Exercise* (Riebe, et al., 2015). The present study is timely in that it provides additional evidence to support the proposed changes as described below in the Discussion.

ACSM certified Health Fitness Specialists (HFSs) served as the population to investigate the many variables associated with PHSP in fitness facilities in this study. Note: ACSM recently changed the title of this certification to Certified Exercise Physiologist (“American College”, 2014) but the former title (HFS) will be used. Fitness professionals, especially those certified as HFSs should be familiar with screening procedures published by ACSM, e.g., the *ACSM's GETP* is the recommended resource to help prepare for the ACSM HFS certification exam.

Given this orientation to the *ACSM's GETP* and the likely exposure to other ACSM publications, it was assumed that the fitness facilities where these HFSs were employed would make genuine efforts to follow the ACSM's standards and guidelines regarding PHSP. The major purposes of this study were to determine if fitness facilities were adhering to ACSM's pre-activity screening procedures and to inquire about other facility practices related to screening. Variables investigated related to facility practices included (a) the requirement of new participants to complete a screening device and to determine if differences existed among fitness settings, (b) reasons for not conducting screening, (c) type of screening conducted (i.e., self-guided or professionally guided), (d) specific practices related to professionally-guided such as requiring medical clearance, frequency of screening, participant refusal, and (e) for facilities utilizing the *ACSM's GETP*, determine to what extent they are following the screening criteria. Another purpose of this study was to obtain perceptions of ACSM certified HFSs related to PHSP such as their level of familiarity with ACSM's professional standards/guidelines, knowledge/beliefs, and perceived challenges in carrying out PHSP.

2.0 Methods

The following methods were developed utilizing the Checklist for Reporting Results of Internet Surveys – CHERRIES (Eysenbach, 2004). A more detailed description of how the methods (and the reporting of results) met the applicable items in this Checklist can be found elsewhere (Craig, 2014).

2.1 Instrument for Obtaining Data/IRB Approval. A web-based survey instrument was developed to obtain the data for this study and consisted of 54 questions with 32 questions addressing fitness facility practices related to PHSP, 14 questions regarding perceptions of the participants (ACSM certified HFSs) related to PHSP, seven demographic questions, and one open-ended question to inquire about the perceived challenges in carrying out PHSP. The majority of questions were written as close-ended using multiple choice, multiple choice table, and 4-point scalar format response options. The survey was made available via Survey Gizmo (“Survey”, 2014). IRB approval was received on January 15, 2014 (prior to the pilot study) and again on August 11, 2014, prior to the survey being distributed.

The survey began with the Informed Consent (IC) approved by the IRB at the University of South Florida. Survey participants were then directed to a “Notes” page with instructions and definitions of terms used throughout the survey. Participants were informed of the voluntary nature of this study, a requirement of the IRB. According to

Dillman(2007),“respondents should never be forced to provide a substantive answer before moving to the next question”(p. 394). This was achieved by enabling a “soft requirement” feature for each question in the survey which allowed respondents to skip questions they voluntarily chose not to answer. The survey also was designed with logic and functionality features which customized the survey based on responses to previous questions (Pressor, 2004). For example, for the question “Does your facility require new participants to complete a pre-activity screening device prior to their participation,” those who answered “yes” automatically continued with the next question and those who answered “no” or “don’t know” were automatically redirected to other follow-up questions based on their response.

Additional user-friendly features to enhance the efficiency in completing the survey included hyperlinks for the all the terms defined in the “Notes” page and used throughout the questions in the survey. The definitions would appear by hovering over the hyperlink to quickly remind respondents of the definitions.

2.2 Pre-Pilot and Pilot Studies, and Validation of Survey Instrument.To establish sound methodology and obtain valid data, both pre-pilot and pilot studies were conducted. The results of the pre-pilot study provided constructive feedback from experts, health/fitness professionals, and lay persons.This feedback was integrated into the methods of the study as well as the design of the instrument in preparation for the pilot study. The pilot study involved 21 ACSM certified HFSs in the Tampa Bay, FL area and was designed to (a) obtain feedback regarding the clarity and content of the questions in the survey instrument, (b) assess the effectiveness and functionality of the procedural aspects of the study, and (c) establish validity of the survey instrument. The feedback and data obtained were used to make many relevant changes and improvements in the survey instrument. The results of the pilot study established evidence of face and content validity of the survey instrument and demonstrated the effectiveness and ease of the web-based procedures (Craig, 2014).

2.3 Description/Selection of Population Sample.The population sample for this study were all fitness professionals who possessed the ACSM Health Fitness Specialist (HFS) Certification in the U.S. ($N = 10,359$). ACSM certifications have been available since 1975 and currently are offered in three different categories: (a) Health Fitness, (b) Clinical, and (c) Specialty. The HFS certification has the most rigorous qualification requirements of the Health Fitness certifications including a Bachelor’s degree in Exercise Science, Exercise Physiology, or Kinesiology from a regionally accredited college or university (“American College”, 2014). Professionals who possess the HFS certification are typically employed or self-employed in a variety of fitness settings such as commercial (for profit), hospital/clinical, corporate, community (nonprofit), university/college, and government.

2.4 Data Collection Procedures.As recommended by Dillman (2007),multiple contacts with study participants are essential for maximizing responses to surveys.Therefore, four recruitment e-mails were sent out by the ACSM certification office to the study participantsover a two week period, August 22 – September 8, 2014. The actual number of emails sent ($n = 9,433$) was lower than the total population due to deletion of pilot study participants, HFSs who requested to not receive any e-mails from the ACSM certification office, and those who had inaccurate e-mail addresses. To also help increase the number of responses to the survey, a financial incentive as suggested

by Fowler (2009) was offered within each of the e-mails, i.e., participants were informed of an option to enter a drawing for a chance to win one of six \$50 gift cards.

2.5 Response Results/Data Analysis. Of those who received the recruitment emails, 1,246 (13%) responded to the survey. Exclusion criteria removed HFSs who were not currently working part-or full-time in a fitness facility, leaving 677 usable responses. Special measures were taken to remove duplicate responses for any given facility which resulted in 656 usable responses for the facility-related questions.

Although the response rate was less than anticipated, the number ($n = 656$) and types ($n = 6$) of fitness facilities represented in this study were higher than any of the previous studies investigating PHSP. The six types of facilities represented were: (a) Commercial (31.7%), (b) Hospital/Clinical (22.5%), (c) Corporate (16.9%), (d) Community (14.7%), (e) University/College (9.2%), and (f) Government (5.0%). In addition, to help strengthen the external validity of the results, the percentages of respondents in the study population and those in the total population were similar across the 12 ACSM geographical regions. Other variables available to compare the study population and total population were sex and age. The percentages for these variables were also similar between the two populations. The sample of respondents also possessed strong credentials with 55%, 36% and 4% having a bachelor's, master's, or doctorate degree, respectively, and 60% having 5 or more years of professional experience and 41% having 10 or more years of professional experience. The data were analyzed using both quantitative, i.e., descriptive statistics, chi-square analyses (Powell, 1982) and qualitative (grounded theory) analyses (Glaser & Strauss, 1967) for the one open-ended question. For the chi-square analyses, a Bonferroni (Keppel, 1991) adjustment was made resulting in the level of significance set at $P < 0.006$ to help decrease the likelihood of a Type I error.

3.0 Results

Part 1: Fitness Facility Practices related to PHSP (n=656)

3.1 Practices -- new participants. Prior to completing a screening device, new participants are often informed of the inherent risks (minor, major, life threatening, and death) associated with physical activity through a written document such as an informed consent, waiver, or membership agreement. When asked if their facility formally notifies (through a written document) new participants of these risks, 605 (86%) of the respondents indicated yes. When asked if their facility required new participants to complete a pre-activity screening device, 443 (73%), 144 (24%), and 18 (3%) of the respondents indicated yes, no, and don't know, respectively.

Among the 443 facilities that required new participants to complete a screening device, comparisons among six types of settings are presented in Figure 1 with hospital settings significantly higher ($P < 0.006$) than all other settings and Corporate settings significantly higher ($P < 0.006$) than Community and Commercial settings. Of the 144 facilities that did not require completion of a screening device, 118 respondents of these facilities provided the following reasons: (a) participants have responsibility for their own health and actions (36%), (b) screening takes up too much staff time (19%), (c) fitness facility/franchise policy (17%), and (d) screening is barrier to participation (10%), (e) there is no need or purpose (9%), and (f) legal counsel advice (9%). These six reasons for not conducting screening originated from one of the previous studies by Springer et al. (2009b). In this previous study, two of the top three reasons were the same as found in this study: (a) screening takes up too much

staff time and (b) participants have responsibility for their own health and actions. When these respondents were asked if they had made efforts to encourage management to conduct screening, 45% indicated yes, 45% indicated no, and 10% indicated they were the manager.

Of the 443 facilities that required new participants to complete a screening device, 423 respondents indicated the type of screening their facility provided. Of these 423, 110 (26%) conducted self-guided screening (participants are provided a screening device that they complete and interpret on their own such as the PAR-Q), 182 (43%) conducted professionally guided screening (participants complete a screening device but the information is interpreted by a qualified professional to determine if an individual is “at risk” and involves follow-up steps such as requiring medical clearance for anyone classified as “at risk”), and 131 (31%) conducted both self- and professionally-guided screening.

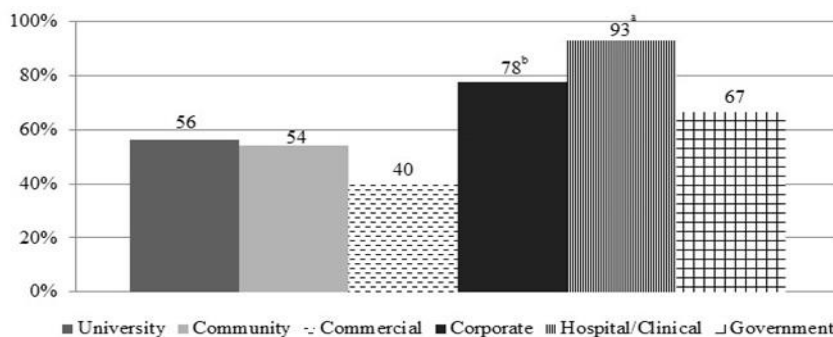


FIGURE 1 – Percentages of fitness facilities that require new participants to complete a pre-activity screening device across settings. (n=433) ^aHospital/Clinical significantly higher than all other settings ($P<.006$). ^bCorporate significantly higher than Community and Commercial ($P<.006$).

It is speculated that the facilities conducting both may have new participants who join to exercise on their own complete self-guided screening and those who enroll in individualized programs such as personal training complete professionally-guided screening.

3.2 Practices -- professionally-guided screening. The respondents of the 313 facilities (182 + 131 as indicated above) that conducted professionally-guided screening were asked several follow-up questions on the survey to obtain further details regarding these practices. When asked which screening device they used, 310 respondents representing the 313 facilities answered with 163 (53%) indicated they used a ready-made tool such as the PAR-Q or a Health Risk Appraisal and 123 (40%) indicated they used a “custom/in-house developed” device. When asked if they had pre-established criteria to identify “at risk” individuals, 301 responded with 248 (83%) indicated they did, and of these 248, a large majority (n=219, 88%) had a health/fitness professional interpret the criteria and make the determination if a participant was “at risk.” A large majority of these 248 facilities (n=216, 87%) also required “at risk” participants to obtain medical clearance and most of these (n=169, 78%) provided these participants with a medical clearance form for their medical care provider to complete and sign.

With regard to how often participants complete their professionally-guided screening procedures, 301 respondents of 313 facilities represented answered this question and two other questions regarding: (a) the facility’s

policy/procedure for participants who refuse to complete their PHSP, and (b) which publication was primarily used to develop/implement their PHSP.

See Table 1 for these data. Regarding having a policy to keep personal health information obtained on the screening device (a) private, (b) confidential, and (c) secure, a large percentage of these 301 facilities did so with 89%, 96%, and 85%, respectively.

3.3 Practices -- ACSM's GETP criteria/process. Of the 157 facilities that used ACSM's GETP to develop/implement their professionally-guided PHSP, 151 respondents of these facilities provided additional information regarding the inclusion of the GETP criteria on their screening device as follows: (a) 96%, 91%, 87% included known CV, pulmonary and metabolic disease, respectively, (b) 88% included signs/symptoms with dizziness/syncope the highest (95%) and intermittent claudication the lowest (44%), and (c) 87% included CV risk factors with smoking the highest (99%) and high-density lipoprotein the lowest (64%). See Figure 2. It is likely that certain items such as intermittent claudication and high-density lipoprotein are not included on screening devices as often because the lay public may not understand what they mean. The ACSM's GETP provides a logic model using these criteria to classify participants into low, moderate, and high risk categories to help determine which individuals should obtain medical clearance, i.e., all high risk and certain moderate risk (those who want to initiate a vigorous exercise program). However, only 62% of the respondents of these facilities indicated they conducted this risk classification process.

TABLE 1. Facility practices related to professionally-guided pre-activity health screening procedures (n = 301)

<i>How often do participants complete your PHSP?</i>	
	<i>f (%)</i>
Initially only (e.g., when they join for the first time)	109 (36)
Initially and annually thereafter (e.g., when they renew their membership)	46 (15)
Initially and when a participant informs a staff member of a change in health status	119 (40)
Don't know	8 (3)
Other	19 (6)
<i>For new participants who refuse to complete PHSP, which of the following reflects your facility's policy?</i>	
New participants are excluded from participation in program offerings	154 (51)
New participants are allowed to participate in program offerings, but first they must sign a document acknowledging their refusal to complete pre-activity screening procedures	115 (38)
Other	32 (11)
<i>Which publication was primarily used to develop and implement your facility's PHSP?</i>	
ACSM's Guidelines for Exercise Testing and Prescription	157 (52)
ACSM's Health/Fitness Facility Standards and Guidelines	26 (9)
AHA/ACSM Joint Position Statement – Recommendations for Cardiovascular Screening, Staffing, and Emergency Policies at Health/Fitness Facilities	14 (5)
Other	13 (4)
Don't know	6 (2)
None	85 (28)

Abbreviations: PHSP – pre-activity health screening procedures

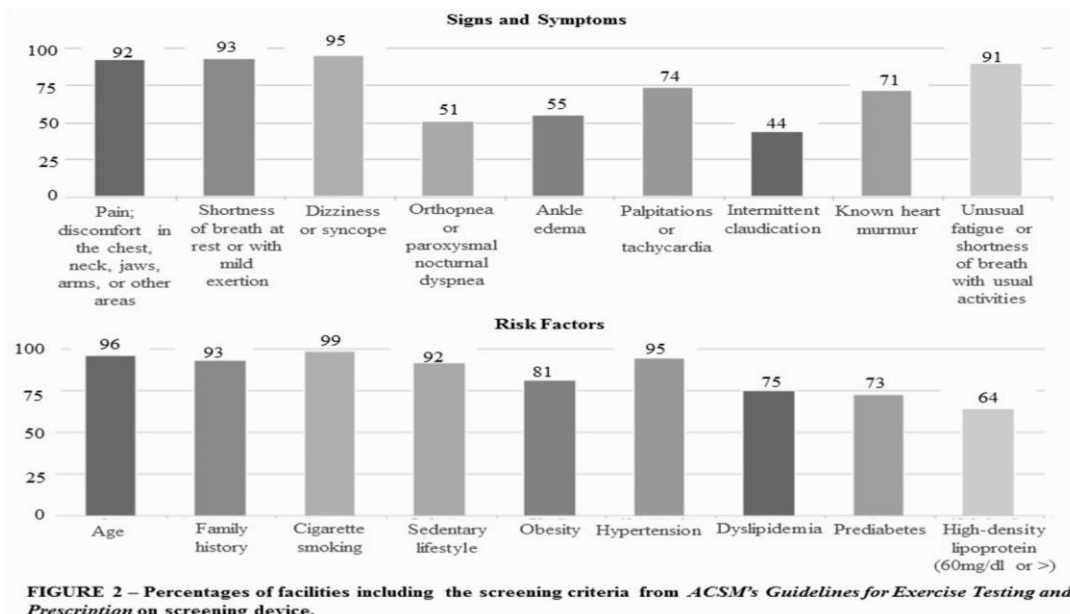


FIGURE 2 – Percentages of facilities including the screening criteria from *ACSM's Guidelines for Exercise Testing and Prescription* on screening device.

Part 2: Perceptions of ACSM Certified HFSs related to PHSP (N=677)

3.4 Perceptions – familiarity with ACSM’s published standards/guidelines. Table 2 provides the data from the respondents when asked about their level of familiarity (and that of their facility’s top manager) with the three ACSM publications. The respondents were more familiar with the *ACSM’s GETP* than with the other two ACSM publications. For all three ACSM publications, the respondent’s level of familiarity was higher than their perception of their top manager’s level of familiarity. A similar pattern of responses was found when respondents were asked about their perceived level of importance to adhere to published standards/guidelines and that of their top manager, e.g., 70% of the respondents felt it was “very important” whereas only 49% indicated “very important” when rating their top manager’s level of importance.

TABLE 2. Level of familiarity with pre-activity screening procedures in ACSM's published standards and guidelines

ACSM Certified HFSs (n = 555)				
	Very Familiar f(%)	Familiar f(%)	Somewhat Familiar f(%)	Not Familiar f(%)
ACSM's Guidelines for Exercise Testing and Prescription	382 (69)	145 (26)	25 (4)	3 (1)
ACSM's Health/Fitness Facility Standards and Guidelines	210 (38)	195 (35)	118 (21)	32 (6)
AHA/ACSM Joint Position Statement – Recommendations for Cardiovascular Screening, Staffing, and Emergency Policies at Health/Fitness Facilities	127 (23)	176 (32)	164 (30)	88 (15)

Rating by ACSM Certified HFSs of their Facility Manager's Familiarity (n = 547)					
	Very Familiar f(%)	Familiar f(%)	Somewhat Familiar f(%)	Not Familiar f(%)	Don't Know f(%)
ACSM's Guidelines for Exercise Testing and Prescription	184 (34)	102 (19)	83 (15)	81 (14)	97 (18)
ACSM's Health/Fitness Facility Standards and Guidelines	144 (26)	99 (18)	103 (19)	89 (16)	112 (21)
AHA/ACSM Joint Position Statement – Recommendations for Cardiovascular Screening, Staffing, and Emergency Policies at Health/Fitness Facilities	101 (19)	99 (18)	103 (18)	108 (20)	136 (25)

Abbreviations: HFS – health fitness specialist

3.5 Perceptions -- knowledge and belief regarding PHSP. When asked about their level of confidence in conducting professionally-guided screening, the majority of respondents (70%) indicated “very confident” (see Table 3). Of the 547 respondents who answered that question, 493 (90%) indicated that their academic course work included preactivity health screening content. However, when asked about their level of adequacy regarding pre-activity screening information covered in their academic programs, only 52% indicated “more than adequate” and only 28% indicated “more than adequate” when asked specifically about the level of information covered regarding legal implications involved with PHSP (see Table 3). Only 118 (22%) of the respondents were aware of any legal cases in which the failure to conduct PHSP resulted in a negligent claim/lawsuit against a facility but 432 (79%) indicated there was an increased risk for a negligence claim/lawsuit against facilities that do not conduct PHSP.

TABLE 3. Perceptions of ACSM Certified HFSs - knowledge and beliefs regarding PHSP

	Conducting Professionally - Guided PHSP n = 547		Screening Information Covered in Academic Program n = 493	Preparation Regarding Legal Implications n = 547
	f(%)		f(%)	f(%)
Very Confident	385 (70.4)	More than Adequate	255 (51.7)	155 (28.3)
Confident	144 (26.4)	Adequate	205 (41.6)	212 (38.8)
Somewhat Confident	17 (3.1)	Somewhat Adequate	31 (6.3)	135 (24.7)
Not Confident	1 (0.2)	Not Adequate	2 (0.4)	45 (8.2)

Abbreviations: HFS – health fitness specialist; PHSP – pre-activity health screening procedures

Regarding the respondents' beliefs related to the various purposes and benefits regarding screening, ≥ 70% of the respondents indicated “strongly agree” to each of the statements as shown in Table 4.

TABLE 4. Perceptions of ACSM Certified HFSs – level of agreement regarding purposes and benefits of PHSP (n = 547)

	Strongly Agree f(%)	Agree f(%)	Disagree f(%)	Strongly Disagree f(%)
Data obtained in pre-activity health screening should be used when designing an individualized exercise program	477 (87)	69 (12.8)	1 (.2)	0 (0)
Pre-activity Health Screening Procedures that include requiring medical clearance for at risk participants can lead to medical intervention/treatment.	380 (70)	156 (28)	10 (1.8)	1 (.2)
Conducting pre-activity screening procedures enhances the quality of our program.	434 (79)	107 (20)	6 (1)	0 (0)
Conducting pre-activity screening procedures enhances the professional reputation of our program.	447 (82)	95 (17)	5 (1)	0 (0)
Pre-activity Health Screening helps ensure the safety of our participants	474 (87)	69 (12.3)	4 (.7)	0 (0)

Abbreviations: HFS – health fitness specialist; PHSP – pre-activity health screening procedures

3.6 Perceptions – challenges regarding PHSP. From the open-ended question regarding perceived challenges in conducting PHSP, 281 different responses were analyzed. Using grounded theory principles, these data were coded and then categorized into three major themes: (a) member related issues (n=140, 50%), (b) administrative/procedural related issues (n=106, 38%), and (c) medical clearance related issues (n=35, 12%). The following statements are a representation of the type of comments provided by respondents for each of the major themes:

Member related issues:

- “Some individuals do not want to go through the process of obtaining physician clearance prior to using the facility.”
- “People do not understand the importance of it.” o “Clients not understanding the questions.”
- “Some people are unsure of their health history/information” o “Many people are not totally honest on their forms.”

Administrative/procedural related issues:

- “Lack of support from owners and managers who do not have an educational background in exercise science.”
- “Owners would not like it. It was discussed.”
- “At my facility it does not seem to be as important as selling personal training and memberships.”
- “Part-time staff does not have knowledge or skills to properly discuss health history and risks.”
- “Time is the biggest problem.”
- “No systems in place.”

Medical clearance related issues:

- “Clients resist seeing a physician for clearance.”
- “Some people do not come back/quit when I inform them that they need to get medical clearance.”
- “Dr. Offices not responding to forms faxed regarding their patient’s risk of exercise and any restrictions.”

- “When requesting clearance, not all doctors consent because they state it is not up to them to clear the patient.”

4.0 Discussion

The discussion will highlight the significance of the findings from several perspectives. To assist with the interpretation of the data with regard to adherence to ACSM’s pre-activity screening procedures, it was arbitrarily decided that percentages above 75% indicated high adherence or positive findings. Most importantly, recommendations to increase adherence are provided throughout.

4.1 Limitations. Several limitations inherent in survey research include four sources of error: coverage, sampling, measurement, and nonresponsive (Dillman, 2007). For example, a coverage error occurs when all members of the survey population do not have an equal chance of being included in the study sample. This was minimized by the ACSM office emailing all ACSM HFSs in the U.S. inviting them to participate in the study. A sampling error occurs when only a subset of a population is surveyed and to address this limitation, this study included the entire population of certified ACSM HFS in the U.S. A measurement error results from faulty question wording and poor questionnaire construction and was addressed in this study through well-designed and implemented pre-pilot and pilot studies. A nonresponse error occurs when a significant number of the population do not respond and have different characteristics from those who do respond. Data describing characteristics of non-respondents were not available but certain characteristics (sex, age, and ACSM geographical region) of the respondent sample and the total sample were similar. Additional limitations in survey research include “response effects” and include the data being selfreported, the order of the questions may influence responses to subsequent questions, and missing data due to the voluntary nature which allowed respondents to skip questions (a preferred practice and requirement of the IRB).

4.2 Support for Proposed Changes with the ACSM’s GETP Screening

Criteria/Process. The proposed changes to be published in the next edition of the ACSM’s GETP addressing pre-participation screening criteria/process will simplify PHSP for fitness facilities by (a) reducing the criteria needed on a screening device, (b) eliminating the process to classify individuals into of low, moderate, and high risk categories, and (c) decreasing the number of individuals who would need to obtain medical clearance (Riebe, et al., 2015).The proposed changes also will be advantageous for many new participants who will no longer need to obtain medical clearance and thus remove this barrier prior to initiating a physical activity program. This study provides data to support these proposed changes.

For example, of the facilities conducting professionally-guided screening, only 52% utilized the ACSM’s GETP to develop/implement their PHSP. This low percentage may be due to the complexity of the screening criteria and the steps to carry out the process as evident by the comments of respondents especially with respect to medical clearance issues with members, managers, and physicians. The issue of medical clearance and the barriers/challenges it creates was a major rationale for the changes discussed in the ACSM paper (Riebe, et al., 2015). In addition, about ¼ (24%) of fitness facilities represented in this study were not conducting screening and of those conducting screening, over ¼ (26%) were conducting self-guided screening which does not meet ACSM’s GETP criteria/process. By simplifying the screening process, perhaps more facilities will consider adopting the

revised procedures because they will be more efficient for facility staff members to carry out than the current procedures and will address one of the major reasons for not conducting screening – it takes up too much staff time – as evident from the findings of this study and Springer et al.

(2009b).

4.3 Fitness Facility Practices. The percentage of fitness facilities that required new participants to complete a screening device was 73% in this study, which is the second highest when compared to the previous six studies in which these percentages were 10% (Herbert et al., 2007), 33% (Springer et al., 2009a), 42% (McInnis et al., 2001), 61% (McInnis et al., 1997), 66% (Eickhoff-Shemek & Deja, 2002a), and 87% (Morrey et al., 2002). The lowest (10%) was a national study of university settings (campus recreation facilities) and the highest (87%) was a national study of corporate settings.

As hypothesized, significantly more hospital/clinical and corporate settings required new participants to complete a screening device than other settings. These results are similar to two previous studies (Eickhoff-Shemek & Deja, 2002b; Springer et al., 2009b). Hospital/clinical and corporate settings often have more resources (e.g., staff to participant ratios may be lower) and they also may provide fitness services for a smaller membership base than commercial, university/college, community, and government settings. Also, hospital/clinical settings are accustomed to following standards (e.g., Joint Commission on the Accreditation of Health Care Organizations) and therefore are likely to follow other standards/guidelines such as those published by ACSM.

The facilities (24%) that do not have new participants complete a screening device are most common in commercial, community, university/college, and government settings. It is important to realize that the reasons provided for not conducting screening would not be considered viable defenses in a court of law for the failure to follow the standard of care (Eickhoff-Shemek, et al., 2009). However, there are positive findings from a legal perspective. A high percentage of facilities are formally notifying new participants of the inherent risks associated with physical activity. Although this procedure is not included within the screening procedures in the ACSM publications, it is a recommendation found elsewhere in these publications and is often administered immediately prior to the screening process. In addition, a high percentage of facilities conducting professionally-guided screening have policies in place to keep health information gathered on a screening device private, confidential, and secure.

Notifying participants of the inherent risks in a document that is signed by the participant can strengthen the primary assumption of risk defense – a potentially effective defense in refuting negligence claims/lawsuits. Keeping an individual's health information private, confidential, and secure would reflect compliance with certain federal and/or state privacy laws that might be applicable (Eickhoff-Shemek, et al., 2009).

Also indicative of positive findings among the facilities conducting professionally-guided screening is that a high percentage of them (> 83%) have health/fitness professionals interpret the data on the screening device to determine if a participant is “at risk” and then require medical clearance for “at risk” participants. Having qualified professionals interpret the data on a screening device is a standard in *ACSM's Standards* and a guideline in the *AHA/ACSM Joint PS* and *ACSM's GETP*. Regarding frequency of screening, none of the ACSM publications provide any specific guidance. However, in the *ACSM's*

Standards (Tharrett& Peterson, 2012), it states that “pre-activity screening may be repeated at appropriate intervals” (p. 9). Because one’s health status can change suddenly, it might be best to have participants inform a staff member when this occurs as 40% of the facilities represented in this study did. Informing participants of this responsibility can be done by adding a signed statement on the screening device such as: If my health status changes at any time, I understand that I am responsible to inform the facility of any such changes. This could be done in addition to annual screening, e.g., when members renew their membership, as did some of the facilities represented in this study.

Over half (51%) of the facilities excluded participants who refused to complete their screening process. Other facilities (38%) allowed these individuals to participate after they sign a refusal document. Refusal procedures are described in both the *ACSM Standards* and the *AHA/ACSM Joint PS*. However, the decision to exclude participants may violate the Americans with Disabilities Act (and other anti-discrimination laws) and therefore is essential to obtain legal advice before implementing such as policy (Eickhoff-Shemek et al., 2009). The refusal document signed by participants is considered a protective legal document and also needs legal review/approval.

4.4 Perceptions of ACSM Certified HFSs. The respondents’ familiarity with ACSM’s publications was quite high with 95%, 73%, and 55% being “very familiar” or “familiar” with the *ACSM’s GETP*, *ACSM Standards*, and *AHA/ACSM Joint PS*, respectively. However, when rating their manager’s levels of familiarity (very familiar and familiar) with these publications, the percentages were much lower -- 52%, 44%, and 36%. Both quantitative data (e.g., 45% of the respondents who work in facilities that did not conduct screening have made an effort to encourage their managers to conduct screening) and qualitative data (e.g., comments made by respondents such as “lack of support from owners and managers who do not have an educational background in exercise science”) might reflect frustration among ACSM certified professionals who want to implement PHSP but do not have the support of their managers to do so. This is important because managers make decisions regarding the daily operations of a fitness facility and if they are unaware of professional safety standards/guidelines or do not think it is important to follow them, it can lead to poor decision making and compromise the safety of participants and subject the facility to legal liability.

Issues concerning managerial decision-making are evident from an experienced expert witness who stated that there has been little or no improvement since a study conducted by Davis (1987) that showed many club managers had a BA degree in business but few had any formal education in exercise science (Abbott, 2009). He also stated that “because managers are rarely well versed in this area of expertise, they are incapable of determining what is necessary to establish safe and effective fitness programming of their membership...Of extreme concern is the current lack of adequate screening for new members...” (Abbott, 2009, p. 99). In order for improvements to be made with regard to screening and other safety practices, it will be necessary to educate fitness facility managers about the ACSM standards/guidelines and how to implement them (i.e., describing administrative steps that can make the process efficient) especially those in certain settings (government, university/college, community, and commercial) in which many (33%-60%) do not have new participants complete a screening device.

High percentages of the respondents “strongly agreed” with the benefits/purposes of screening as shown in Table 4 and these beliefs likely came from their educational background. Almost all (90%) of the respondents indicated

pre-activity screening was covered in their academic course work and most (70%) were “very confident” in conducting screening. However, adequacy of their course work especially related to legal implications associated with PHSP was not perceived as high with only 28% indicating “more than adequate.” These data, along with only 22% of the respondents being aware of negligent lawsuits for failing to conduct screening, indicate a need for education related to the legal issues associated with PHSP.

Many of the challenges identified by the respondents in carrying out PHSP also can be addressed through educational efforts directed toward members and medical providers. For example, comments related to member issues such as “people don’t understand the importance of it” can be addressed by informing participants “why” screening is done, as two respondents indicated “once the importance is expressed to them [new members], they were more than understanding” and “education quells the rebellion.” Some of the challenges in obtaining medical clearance can be addressed by having the participant obtain the clearance directly from his/her medical provider that includes a cover letter addressed to the medical provider explaining why the clearance is needed

4.5 Educational Recommendations. Pre-activity screening involves the development and implementation of various steps as described in the ACSM publications to enhance safety. It also involves addressing a variety of legal issues. Although certain findings in this study related to these steps and legal issues were quite positive, there are areas for improvement that can be addressed through academic and/or continuing education programs for fitness professionals and managers. These educational efforts should focus on increasing familiarity with and adherence to the ACSM standards/guidelines -- not just on “what” they are, but “how” to develop/implement them into a facility’s practices so they can be carried out properly and efficiently and with consideration of applicable laws, and “why” it is important from both safety and legal perspectives. Perhaps ACSM could develop such a program that could be offered in both academic and continuing education programs.

5.0 Conclusions

This was the first study to provide a comprehensive overview of pre-activity screening practices being conducted in fitness facilities across the U.S. and to identify various challenges experienced by ACSM certified professionals when carrying out screening procedures. Positive results indicating high adherence rates (>75%) to ACSM’s screening procedures were: (a) facilities are informing new participants of the inherent risks associated with physical activity, (b) two out of the six settings (hospital/clinical and corporate) are requiring new participants to complete a screening device, (c) facilities that are conducting professionally-guided screening have health/fitness professionals interpret the data on the screening device to determine if an individual is “at risk” and then require “at risk” participants to obtain medical clearance, and (d), facilities that have adopted the ACSM’s *GETP* screening procedures are including a majority of the recommended screening criteria on the device. In order to improve adherence to ACSM’s screening procedures, educational efforts are needed to (a) increase the number of facilities in certain settings (government, university/college, community and commercial) to have new participants complete a screening device, (b) decrease the number of facilities who are not conducting screening or are conducting self-guided screening, and (c) increase the number of facilities to adopt professionally-guided procedures such as those in ACSM’s *GETP*.

ACSM's standards and guidelines are only effective in enhancing safety if fitness professionals and managers are implementing them into their daily operations. The findings from this study, reported by ACSM's own certified professionals, provide new insights into the realities and challenges related to implementing the ACSM's screening procedures. Based on the findings, educational and other strategies were described that could improve adherence by focusing on "how" to implement them and "why" it is important to implement them. The findings in this study also provided support for the proposed changes with the screening procedures that will be published in next edition of the *ACSM's GETP* and will likely lead to increased adherence among facilities and remove the medical clearance barrier for many new participants. Future research might involve surveying fitness facility managers to determine their familiarity with and adherence to ACSM's screening procedures and other safety standards and guidelines described in the ACSM publications.

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