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# Analyzing the Academic Preparation, Standards of Care and Credential Requirements of International Sports Medicine Professionals

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ANALYZING THE ACADEMIC PREPARATION, STANDARDS OF CARE AND  
CREDENTIAL REQUIREMENTS OF INTERNATIONAL SPORTS MEDICINE  
PROFESSIONALS

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Abstract

Since the beginning of the Athletic Training profession, the focus has been on expanding and supporting Sports Medicine in the United States. Little research (Kaminiski, 2009) (Ferrara, 2006) exists on how Athletic Training fits in the International Sports Medicine world. This project aims to add to current knowledge so that Athletic Trainers have knowledge to function in different regions and countries. Athletic Trainers work on-site, at games and practices, to prevent and evaluate injuries, rehabilitate athletes, promote the well-being of athletes, and provide emergency care. Physical therapists work one on one with athletes who sustain musculoskeletal injuries to return them to normal function through rehabilitation. Sports physiotherapists specialize in promoting safe physical activity, adaption of interventions and rehabilitation for athletes and enhancing sports performance. Data was collected to begin analyzing the similarities and differences in the preparation of sports medicine professionals on an international level. 800 Sports Medicine Professionals from a variety of countries were sent a recruitment letter requesting participation with a link to the authors survey. The survey included a 31-item questionnaire, about demographics, academic preparation, credentialing and standards of care in their country. 162 sports medicine professionals responded (20% response rate). Participants answered based on their area of practice. Through literature review we begin to understand attributes of each sports medicine profession. Data from the survey was then analyzed using measures of central tendency, correlations, item analysis, t-tests and one-way ANOVA with Tukey Post Hoc to establish internal consistency, validity and to determine differences between demographics and international sports medicine professionals and specific questions. Sports Medicine requirements are similar, however, there were significant differences in some courses (Kinesiology), skills (Taping, Therapeutic Modalities), requirements (Passing a Test, Internship,

HIPAA/OSHA), and practice location (Private Clinic). These differences were expected due to the way in which each profession practices in their country. Out of all the nationalities included in research, Canada, America, and New Zealand hold the most requirements for their sports medicine professionals. These results tell us the areas where sports medicine professionals are limited in their global mobility. This is one step towards creating global sports medicine competencies.

**ANALYZING THE ACADEMIC PREPARATION, STANDARDS OF CARE AND  
CREDENTIAL REQUIREMENTS OF INTERNATIONAL SPORTS MEDICINE  
PROFESSIONALS**

Athletic Training is an Allied Health Profession that has existed since the late 1800's (Kutz, 2010). It was professionally recognized with the establishment of the National Athletic Trainers' Association in 1950 (Delforge & Behnke, 1999). There is a long history related to the development of education, necessary skills and certification of these professionals in the United States. In recent years, athletic training has begun to expand into other countries. The question of where Athletic Trainers fit in the international sports medicine community is not fully known. However, Ferrara (2006) and Kaminski (2009) have both written editorials on the impact of Athletic Trainers on the international sports medicine community. Ferrara's editorial explored the development of the World Federation of Athletic Training and Therapy as a vehicle to provide an international forum for sports medicine-related professionals. The mutual recognition agreement that was created in 2005 between the Canadian Athletic Therapist Association and the American based Board of Certification was also introduced (Ferrara, 2006). Kaminski (2009) discussed the influence of athletic trainers at the International Ankle Consortium and the leadership role they were beginning to fill in the international sports medicine community. Athletic Training has come a long way since 1950, and the profession is still growing and expanding. Part of that expansion includes global awareness of athletic training and its role within the international sports medicine community.

To date there is virtually no published research that identifies a common or recognized curriculum related to training sports medicine professionals. While several countries have their own criteria and qualifications to practice "sports medicine" none is universally accepted and

few mutual recognition agreements exist. Therefore, this project aims to compare the standards of care and required education of an Athletic Trainer to comparable international sports medicine professionals who were members of their respective international sports medicine organizations.

The countries represented in this project were Canada, Japan, Ireland, Australia, New Zealand, Europe (Germany, Switzerland, Denmark), South Africa, South America, the Middle East, China, Spain, and England. These countries were represented due to their membership to chosen sports medicine organizations. The National Athletic Trainers Association, Canadian Athletic Therapists Association, Japanese Athletic Trainers Organization, Athletic Rehabilitation Therapy Ireland, The Chartered Society of Physiotherapy, Sports Physiotherapy New Zealand, Sports Physiotherapy Australia, and Sports Physiotherapy South Africa were the chosen organizations that agreed to participate by distributing a survey to its members. While it was the hope that more organizations would participate privacy restrictions prevented them from distributing the email and therefore they declined to participate. Data collection was completed for this project and analysis was performed to see the similarities and differences in the preparation of sports medicine professionals on an international level. The purpose of doing so is to promote dialogue around developing international mutual recognition agreements for sports medicine professionals practicing in different countries.

To begin the dialogue about international sports medicine, it is necessary to realize why the subject is important. The likelihood of an athlete sustaining an injury at some point in their career is high. In “a 2002 report by the Centers for Disease Control and Prevention estimated that 4.3 million school-aged children in the USA were treated in an emergency room for a sports related injury” (Carter & Micheli, 2011, p.880). Other researchers found that community sports clubs can have up to 193 injuries a season (Ekegren, Gabbe, Donaldson, Cook, Lloyd, & Finch,

2015). The immediate evaluation and treatment an athlete receives may determine the time line and their ability to return to play. The researchers Wham, Saunders, & Mensch (2010) found that having an Athletic Trainer on-site at secondary schools, significantly impacted the care athletes received. Without access to Athletic Trainers in this setting, athletes were unable to receive the care they needed in an efficient manner. The authors concluded that all athletes need to receive competent injury care to return to play safely (Wham, Saunders, & Mensch, 2010). Currently this care is provided by several different sports medicine professionals in different settings around the world. Sports medicine professionals are allied health care professionals that work with patients involved in sport and physical and occupational activity (NATA, 2017) (ARTI, 2017). In countries with Athletic Trainers, athletes not only receive immediate care, but also have a credentialed health care professional present to witness the injury and respond promptly. However, in the United Kingdom, Australia, New Zealand and South Africa, the physically active must be seen by a physiotherapist (PT) or sports physiotherapist in a private clinic and care is typically not administered on the field or at the time the injury occurred. In comparison, Canada has Certified Athletic Therapists, working along physiotherapists to provide coverage and treatment to athletes in the same way athletic trainers do. The result of not having an on-site professional can mean that injuries are left untreated and without rehabilitation, this will have an impact on an athlete's ability to return to competition and perhaps even impact their quality of life (Doll, Bartenfeld, Binder, 2003).

To understand the impact sports medicine has on athletes an analysis of expected competencies of sports medicine professionals like Athletic Trainers, Physical Therapists and Sports Physiotherapists must be completed. To begin this analysis the competencies of Athletic Training are laid out in five domain areas. Domain 1 is Injury/Illness Prevention and Wellness

Protection, Domain 2 Clinical Evaluation and Diagnosis, Domain 3 is Immediate and Emergency Care, Domain 4 is Treatment and Rehabilitation, and Domain 5 is Organizational and Professional Health and Well-being (NATA, 2010). Curriculums of Athletic Training Programs (ATPS) are based on these domains. The Board of Certification for Athletic Trainers published a document in 1989 based on the Role Delineation Study and the Athletic Training Educational Competencies as an overview of skills and services performed by Certified Athletic Trainers. The most recent and updated edition of this document was published in 2010 and titled the Role Delineation Study and Practice Analysis. The document “addresses the competencies of entry-level athletic training as practiced by a graduate of an accredited athletic training education program” (NATA, 2010, p. 7). To become an athletic trainer one must graduate from a Commission on Accreditation of Athletic Training Education (CAATE) accredited program, pass the Board of Certification examination, and be recognized in the state that they work. Currently all states, except for California, regulate the practice of Athletic Training.

Athletic training is currently transitioning its entry-level practice to require a Masters of Athletic Training. CAATE-accredited, ATP’s are now offering Graduate-level Professional Programs (NATA, 2017). Athletic Trainers are currently recognized in America, Canada, Japan, and Ireland.

The governing body of Athletic Trainers in the United States is the National Athletic Trainers’ Association (NATA). The vision of the NATA is that “Athletic Trainers will be globally recognized as vital practitioners in the delivery and advancement of health care. Through passionate provision of unique services, athletic trainers will be an integral part of the inter-professional health care team” (NATA, 2017).



Of the NATA 44,000 members, 465 of them are international members (NATA, 2017). These sports medicine professionals live and work internationally. The NATA created a committee to meet the needs of their international members and to promote the expansion of athletic training. “The NATA International Committee assists members in establishing and maintaining working relationships with sports medicine specialists internationally that allow them to collaborate, share, and make visible the athletic training profession” (NATA, 2017). The committee provides the opportunity for international sports medicine professionals to connect. It also provides resources for those interested in working abroad including information about what it is like to work internationally and the steps one should take to pursue working at the international level. The committee is dedicated to creating a global network of international sports medicine professionals.

In other parts of the world, athletes see physiotherapist for any musculoskeletal injuries. Physiotherapists are practitioners who work one on one with their patients to return them to normal function. “[Physiotherapists] evaluate and develop rehabilitation plans with the goal of increasing strength, motion, and neuromuscular control in the treatment of musculoskeletal conditions” (Domes & Kruger, 2015, p. 1122). Physiotherapists in the United States are required to have a Doctorate to practice, internationally they are transitioning to this requirement. However, countries like the U.K and Australia currently only require a Master’s degree. Physiotherapists worldwide must graduate from an accredited program. Originally, physiotherapists were trained through apprenticeships, but transitioned to the requirement of completing formal courses in 1973 (Reid, 2013). During their study, physiotherapists learn anatomy, physiology, massage therapy, and strengthening techniques (Chipchase, Galley, Jull, McMeeken, Refshauge, Nayler, & Wright, 2006).

Physiotherapists create programs to prevent injuries (prehabilitation) and to treat various injuries after they occur (rehabilitation). Countries that have physiotherapists are responsible for having individual bodies that regulate physiotherapy practice. In the majority of countries, except for Ireland, registration as a physiotherapy is required (IPPTA, 2015). Physiotherapists background and treatment methods are very specialized. “Physiotherapy is a broad based health care profession that not only addresses musculoskeletal care of the physically active but also divides its attention among a number of diverse medical fields, including oncology, obstetrics, gynecology, pediatrics, rheumatology, respiratory and neurological illnesses and burn injury” (ARTI, 2017). While Athletic Trainers focus primarily on active populations, physiotherapists typically work with a larger range of patients.

Another sports medicine profession to consider is Sports Physiotherapy. This specialization in physiotherapy is growing in response to the rising popularity of athletics and the number of sport injuries sustained. Bulley and Donaghy defined sports physiotherapists as a “recognized professional who demonstrates advanced competencies in the promotion of safe physical activity participation, provision of advice, and adaption of rehabilitation and training interventions, for the purposes of preventing injury, restoring optimal function, and contributing to the enhancement of sports performance, in athletes of all ages and abilities, while ensuring a high standard of professional and ethical practice” (2008, p.105). In Australia, over the last 25 years, an expanding scope of practice for physiotherapists have led to the development of sports physiotherapy (Chipchase, Galley, Jull, McMeeken, Refshauge, Nayler & Wright, 2006). The educational requirements of sports physiotherapist involve first completing a bachelor’s degree in physiotherapy, then specializing by acquiring a master’s degree in sports physiotherapy (Jull & Moore, 2008). Sports physiotherapists establish clinics in communities designed specifically

to treat athletes. These clinics are owned privately, by a sporting organization, or by health centers (Bulley & Donaghy 2008). While sports physiotherapists are trained to provide immediate first aid care, they rarely attend practices or competitions in the same way an athletic trainer would. While athletic trainers provide on-site care and respond with emergency care, sports physiotherapists have their patients referred to them and visit the clinic to evaluate and treat.

The main goal of all three of these professions is to return an individual to full function as quickly and safely as possible. In doing so, the athlete can return to the competition or active lifestyle that they love. Athletic training, physiotherapists, and sports physiotherapists look to improve athletic performance after injury through pain management, strength and agility training (Bulley & Donaghy 2008; Domes & Kruger 2015; NATA 2010). These professionals are able to evaluate an injury and create a treatment plan. In most cases, working one on one with the athlete to complete the rehabilitation. The difference between the treatment methods of these professionals lies in the culture of medicine and the setting in which it is performed. The biggest difference between all the agencies is that, aside from athletic training, treatment and rehabilitation occur solely in a clinic. Despite these sports medicine professions having similar goals and skills, given the fact that athletic trainers are available on-onsite and in emergency situations and the others typically in clinical scenarios it stands to reason there may be different developmental criteria.

This study is one of the first, to investigate the current requirements in the preparation of sports medicine professionals in different countries. Since there is virtually no research in this specific area it is important to explore how different sports medicine professionals establish national competencies. This investigation intends to explore differences and similarities between

different country's sports medicine professional's preparation. Identifying the overlaps could allow for mutual recognition agreements to be developed between countries.

There is current research on the competencies and accreditation of teachers and health care, as well as a developed set of global health competencies (Clark, Raffray, Hendricks, & Gagnon 2016). These competencies allow for doctors, nurses and teachers to be trained and accredited in the same way across the world. In this type of research there are three ways to analyze the current training, practices and accreditations of professionals. Some researchers used a systematic review and article search as their method for determining the global health competencies of the nursing community (Battat, Seidman, Chadi, Chanda, Nehme, Hulme, Li, Faridi, & Brewer 2010; Clark, Raffray, Hendricks, & Gagnon 2016; Hemingway, Aarts, Koskinen, Campbell & Chasse 2012). Battat et al, was able to develop global health competency trends and methods of implementation from the information extracted from the articles, in the areas of knowledge, behavior, physical exam and clinical skills (2010). This systematic review is good for getting background on individual's countries competencies and finding commonalities.

A systematic review was done for articles from Canada, USA, UK, Netherlands, South Africa, United Arab Emirates, New Zealand, Caribbean and Latin America by Clark, Raffray, Hendricks & Gagnon. Clark et al found that global health as it pertains to learning is defined as "knowledge, skills, and attitudes that students acquire through a variety of experiences that enable them to understand world cultures and events, [and] analyze global systems" (2016, p. 177). Finally, Hemingway et al focused solely on the similarities between Canada and E.U.'s preparation and practice of Public Health nurses (2012). The limits to this type of research are the broad topics and that data can be outdated.

Another method for gathering information on the global competencies was through a survey. Wilson, Harper, Tami-Maury, Zarate, Salas, Farley, Warren, Mendes & Ventura distributed a survey to Registered Nurses from the U.S. Canada, Caribbean, and Latin America to analyze the health competencies of the nursing profession (2012). Ingvarson, Elliott, Kleinhenz, & McKenzie distributed a survey to nineteen countries to evaluate the training, competencies and accreditation of the teaching profession (2006). These results were used to develop global requirements for nursing and teaching. These global requirements allow for countries to compare their education and preparation to that of the global standards established through these surveys. This change gave these professionals more mobility and opportunity for international collaboration.

A third way, that is not often used, was to interview individuals from all over the world, giving the individuals the unique opportunity to talk about their personal experiences. Szilagyi & Szecsi (2011) interviewed teachers in Hungary to discover competencies in elementary education. The goal of the article was to “explore elementary teacher candidates’ views about the competencies and their perceived preparedness for these competencies” (Szilagyi & Szecsi, 2011). The article found that competencies in methods courses, field observations, and long-term internships were the most important. No matter what method is used, many professions are realizing it is a global world and therefore global competencies are necessary to promote mutual recognition.

The National Athletic Trainers’ Association decided in 1998 that growing influence would be important to have a global perspective on sports medicine. The World Federation of Athletic Training and Therapy (WFATT) did a similar study by completing a global practice analysis of international sports medicine professionals (Ferrara 2006). One of WFATT’s projects

in 2005 was to develop four major domains “assessment, intervention, administration, and education. The vision for this project is to validate the major domains for the global athletic trainer/therapist with a subset of information to function in a specific region or country” (Ferrara, 2006, p.135). The NATA also decided to begin creating a mutual recognition agreement with Canada. While Athletic Trainers influence sports health care worldwide, the most important aspect, when it comes to a better global understanding, is looking at the culture (Kaminski 2009) Research found that “culture, history and tradition had a significant influence on methods of practice” (Crisp, 1998, p. 57). This could be the reason there is some resistance to creating mutual recognition agreements between sports medicine professionals. However, each sports medicine profession has their unique set of assets that could be utilized worldwide. This paper aimed to analyze the similarities and differences of these professionals. This will also highlight the assets of each profession. This paper will set out to answer these research questions:

1. How are international Athletic Trainers and other international sports medicine providers (e.g., UK, Japan, Canada, Australia) academically prepared for their professions?
2. What are the standards of care and credential requirements for international athletic trainers?
3. 3. How are athletic trainers perceived by their international sports medicine colleagues in other countries?

### **Methods**

Sports Medicine Professionals from Canada, Japan, Ireland, Australia, New Zealand, Europe (Germany, Switzerlenderland, Denmark), South Africa, South America, the Middle East (Iran, Egypt), China, Spain, and England were sent a recruitment letter requesting participation with a

link to the investigator's survey. Before completing the survey, participants read the informed consent document attached to the request for participation email. The purpose of the survey was to explore the academic preparation, standards of care and credential requirements of international sports medicine professionals.

### **Procedure**

This study received HSRB approval through Bowling Green State University (BGSU). Subjects were recruited by contacting the member services of the following organizations the National Athletic Trainers' Association (USA and its international members), Canadian Athletic Therapists Association, Japanese Athletic Trainers' Organization, Athletic Rehabilitation Therapy Ireland, The Chartered Society of Physiotherapy (Europe), Sports Physiotherapy New Zealand, Sports Physiotherapy Australia, and Sports Physiotherapy South Africa. The organizations independently distributed the survey via email to their members, each participant was informed of HSRB approval, and gave consent by agreeing to participate in the survey. The survey was hosted on an external survey website (Qualtrics). Participants were blinded to the researcher.

### **Participants**

800 sports medicine professionals who were members of various international sports medicine associations were contacted about participating in this study. Respondents were from Canada, Japan, Ireland, Australia, New Zealand, Europe (Germany, Switzerland, Denmark), South Africa, South America, the Middle East (Iran, Egypt), China, Spain, and England. A range of medicine professionals were recruited for the study including; Athletic Trainers, Physical therapists and Sports Physiotherapists. The survey was only offered in English, participants without English proficiency were excluded from the survey. Additionally, sports medicine

professionals were excluded if they were not professional members of Sports Medicine Associations.

### **Measures**

Sports medicine Professionals were asked to complete a demographics section to ascertain the participant's age, gender, ethnicity, nationality, country of origin, degree completed, professional certification, practice geographic, and patient population. The second part of the survey explored the participant's academic preparation, standards of care, and credential requirements. The instrument International Sports Medicine Requirements (ISMR) was developed for this investigation to assess the frequency of these requirements across the different countries (Board of Certification, 2010) (Bureau of Labor Statistics, 2016). The survey consisted of 32 questions, 10 questions were to gather demographic information, 8 questions to ascertain the credential requirements, 4 questions about education, 9 questions looking at the standards of care, and 1 to look at the global perception of Athletic Trainers (See Appendix).

### **Data Analysis**

Cronbach coefficient alpha with item analysis was used to determine internal consistency of the ISMR that was developed for this investigation,  $\alpha=.87$  and item-analysis if item deleted ranged from  $\alpha= .86$  to  $.88$ , indicating a strong internal consistency of the scale. Multiple responses were collected for all participants. The multiple response questions were coded so that 1 meant the answer was selected, and 0 meant it was not, scale range was between 0 and 1. Descriptive statistics (measures of central tendency) were used to describe participants and responses. Independent samples t-tests were used to compare participant's major, and degree completed between respondent's profession. One-way ANOVA's with a Tukey post-hoc was used to explore differences between nationality.



The independent samples T-tests were used for participants major due to the fact there were 112 Athletic Trainers, 42 Physiotherapists, 6 Physical Therapists and only 1 Sports Trainer. The independent samples T-tests allowed a more comparable data set to be developed between groups aside from seeing the effect of Nationality (Athletic Training 112 and Physiotherapy 42). The investigator was interested in seeing if there were any distinct differences between the professions of Athletic Training and physiotherapy specifically. An independent-samples t-test was conducted in order to compare credential requirements between physiotherapists and athletic trainers (completing a degree vs passing an examination). An independent samples T-Test was conducted to compare the academic preparation of Athletic Trainers to Physiotherapists in the requirement of taking kinesiology and First Aid/CPR as a course. Finally, an independent sample T-test was conducted to find the difference of standards of care between physiotherapists and athletic trainers as it pertains to completing an injury evaluation on an athlete.

Independent sample T-tests were also used for analyzing requirements for the level of degree in hopes that it would give the investigator a better understanding and break down of the professional requirements of sports medicine (bachelor vs. master, DAT/DPT vs. PhD). The investigator wanted to see if there were any specific differences between the types of doctorate these professionals can obtain. Also with some countries sports medicine professionals are required to obtain a bachelor, while others must complete a master, so a T-test was run to see if these degrees had any impact on the requirements. Independent-samples T-tests were conducted in order to compare academic preparation of Clinical Doctorates and PhD's, as well as Masters and Bachelors degree as it pertains to completing the courses of Anatomy and Physiology, and Rehabilitation. Independent samples T-test were used to analyze the required skill of rehabilitation through improving balance, ROM, and strength as a professional with a bachelors'

degree to that of a masters'. Finally, an independent-samples t-test was conducted to see the difference in being able to use therapeutic modalities as a skill between clinicians with masters' and bachelors' degrees.

ANOVA's analyzed the requirements of all sports medicine professions through the lens of nationality. An ANOVA was run to see if there were differences between nationalities as it pertains to completing a college degree. One was also run to see if there were any differences in countries whose clinicians must pass a certification exam. In regards to other credentialing requirements a One-way ANOVA was run to compare nationalities in the requirement of completing an internship. When it comes to academic preparation evaluation of coursework such as Injury Evaluation, Rehabilitation, and Kinesiology, a one-way ANOVA was used to analyze the similarities and differences of sports medicine professionals from the represented nationalities. A one-way ANOVA was conducted for clinicians standards of care in the skill of diagnosing an injury and creating a treatment plan. A one-way between subject's ANOVA was used to compare nationalities requirements of having a skill in preventing injury through taping and bracing. Another one-way ANOVA was conducted to compare the skill of using Therapeutic Modalities to treat injuries. Finally, a one-way ANOVA was used to see the differences in nationalities as it pertains to maintaining HIPAA & OSHA and working out of a private clinic or practice.

### **Results**

162 participants responded to the survey. Participants ages ranged from 21-72, mean age was  $37.01 \pm 11.13$  years, median age was 35. For full demographic information see Tables 2 and 3.

### **Credential Requirements**

Multiple-response data gives results for the credential requirements of nationalities and is presented in Figure 2.

An independent-samples comparing credential requirements (degree vs examination) revealed physiotherapists ( $M = .98$ ,  $SD = .154$ ) were more likely to have had to complete a college degree than Athletic Trainers ( $M = .83$ ,  $SD = .377$ );  $t(152) = -2.428$ ,  $p = .000$ . Athletic Trainers ( $M = .79$ ,  $SD = .412$ ) were more likely required to pass a certification test than physiotherapists ( $M = .05$ ,  $SD = .216$ );  $t(152) = 11.038$ ,  $p = .000$ .

A one-way between subject's ANOVA comparing the requirement of completing a college degree to receive certification among all 13 countries. There was not a significant difference found between any of the nationalities at the  $p < .05$  level [ $F(13, 148) = 1.053$ ,  $p = .405$ ]. Clinicians from all 13 countries are required to complete a college degree in order to become certified. A one-way between subject's ANOVA comparing the requirement of passing a certification test in order to receive certification among the nationalities of America, Australia, Canada, Ireland, Japan, and New Zealand. There was a significant difference among nationalities for this requirement. Ireland, America, Canada and Japan all required passing a certification test more than that of Australia and New Zealand at the  $p < .05$  level for the six countries [ $F(13, 148) = 8.794$ ,  $p = .000$ ]. Post hoc comparisons using the Tukey HSD test indicated that the mean score for clinicians from Canada ( $M = .86$ ,  $SD = .359$ ), America ( $M = .79$ ,  $SD = .412$ ), Japan ( $M = .75$ ,  $SD = .444$ ), and Ireland ( $M = .67$ ,  $SD = .485$ ) were significantly different from that of the mean scores of clinicians from Australia ( $M = .08$ ,  $SD = .277$ ) and New Zealand ( $M = .08$ ,  $SD = .289$ ). For further analysis of results see Figure 2.

A one-way between subject's ANOVA comparing the requirement of an internship among the nationalities of Canada, New Zealand and Ireland. There was a significant difference

in nationalities requiring internships with Canada requiring it more than that of Ireland and New Zealand at the  $p < .05$  level for the three countries [ $F(148, 13) = 2.583, p = .003$ ]. Post hoc comparisons using the Tukey HSD test indicated that the mean score for clinicians from Canada ( $M = .76, SD = .436$ ) was significantly different from that of the mean score of clinicians from Ireland ( $M = .17, SD = .383$ ) and New Zealand ( $M = .17, SD = .389$ ). Clinicians from Canada were significantly more likely required to complete an internship to receive their certification, than clinicians from Ireland and New Zealand. For further analysis of results see Figure 3.

### **Academic Preparation**

Multiple-response data gives results for the academic preparation of nationalities and is presented in Figure 4.

Independent-samples T-tests comparing academic preparation (Bachelors vs Masters). Clinicians with a master degree ( $M = .88, SD = .331$ ) were significantly more likely to have had a kinesiology course requirement compared to clinicians with a bachelor degree ( $M = .80, SD = .401$ );  $t(143) = -1.88, p = .020$ .

Further evaluation through independent-samples t-tests comparing academic preparation of athletic trainers to physiotherapists. Athletic Trainers ( $M = .89, SD = .311$ ) were more likely to have had a kinesiology course requirement compared to Physiotherapists ( $M = .74, SD = .445$ ), regardless of nationality;  $t(152) = 2.430, p = .016$ . Athletic Trainers ( $M = .95, SD = .226$ ) also were more likely to have had a First Aid/CPR requirement compared to physiotherapists ( $M = .86, SD = .354$ );  $t(152) = 1.849, p = .000$ .

A one-way between subject's ANOVA comparing the requirement of completing an Injury Evaluation course as an educational requirement among all 13 countries. There was not a significant difference found between any of the nationalities at the  $p < .05$  level [ $F(13, 148) = .954,$

$p=.500$ ]. Clinicians from all 13 countries are required to complete a course in Injury Evaluation in their academic preparation. A one-way between subject's ANOVA comparing the requirement of completing a Rehabilitation course as an educational requirement among all 13 countries. There was not a significant difference found between any of the nationalities at the  $p<.05$  level [ $F(13, 148)= .841, p=.616$ ]. Clinicians from all 13 countries are required to complete a course in Rehabilitation in their academic preparation.

A one-way between subject's ANOVA comparing the requirement of completing a Kinesiology course among the nationalities of Europe (Germany, Switzerland), Canada, and America. There was a significant difference between nationalities requiring this course with Europe requiring it less than that of Canada and America at the  $p<.05$  level for all three countries [ $F(13, 148)= 1.842, p= .042$ ]. Post hoc comparisons using the Tukey post hoc test indicated that the mean score for clinicians from America ( $M= .90, SD= .298$ ) and Canada ( $M= .90, SD= .301$ ) was significantly different from that of the mean score of clinicians from Europe ( $M= .00, .000$ ). Refer to Figure 4.

### **Competencies/ Standards of Care**

An interpretation of multiple-response data gives results for the competencies of certain nationalities are presented in Figures 5 & 6.

Independent-samples T-tests comparing required skills (bachelor vs. masters, athletic trainers vs. physiotherapists). Clinicians with bachelor degrees ( $M=1.00, SD=.000$ ) are more likely to be required to have a skill in rehabilitation through improving balance, ROM, and strength than those with a master degree ( $M= .92, SD= .271$ );  $t(143)= 2.171, p=.032$ . A clinician with a bachelor degree are significantly more likely to be required to have a skill in therapeutic

modalities, then that of master degree holders. ( $M=.93$ ,  $SD=.260$ ) to ( $M=.82$ ,  $SD=.386$ );  $t(143)=1.851$ ,  $p=.000$ .

Further evaluation through independent-samples t-tests found that athletic trainers are more likely to be competent in injury evaluation compared to physiotherapists. ( $M=.95$ ,  $SD=.226$ ) to ( $M=.88$ ,  $SD=.328$ );  $t(152)=1.405$ ,  $p=.006$ , respectively. Results also showed that Athletic Trainers ( $M=.84$ ,  $SD=.351$ ) were more like to require the skill of taping and bracing than that of physiotherapists ( $M=.93$ ,  $SD=.261$ );  $t(152)=2.329$ ,  $p=.021$ .

A one-way between subject's ANOVA comparing whether the skill of diagnosing an injury as a requirement among all 13 countries. There was not a significant difference found between any of the nationalities at the  $p<.05$  level [ $F(13, 148)=.833$ ,  $p=.625$ ]. Clinicians from all 13 countries are required to know how to diagnose an injury within their profession. A one-way between subject's ANOVA comparing whether the skill of creating a treatment plan is a requirement among all 13 countries. There was not a significant difference found between any of the nationalities at the  $p<.05$  level [ $F(13, 148)=1.207$ ,  $p=.279$ ]. Clinicians from all 13 countries are required to know how to develop a treatment plan for their patients.

A one-way between subject's ANOVA comparing the requirements of prevention of injury through taping and bracing as a skill among the nationalities America, Canada, New Zealand, and Europe (Germany & Switzerland). There was a significant difference in nationalities requiring this skill with Europe requiring it less than that of America, Canada, and New Zealand at the  $p<.05$  level for all four countries [ $F(13, 148)=1.968$ ,  $p=.027$ ]. Post hoc comparisons using the Tukey HSD test indicated that the mean score for clinicians from America ( $M=.88$ ,  $SD=.383$ ), Canada ( $M=.90$ ,  $SD=.301$ ), and New Zealand ( $M=1.00$ ,  $SD=.000$ ) was significantly different from that of the mean score of clinicians from Europe ( $M=.00$ ,  $SD=.000$ ).

A one-way between subject's ANOVA also compared the requirements of Therapeutic Modalities as a skill among the nationalities America, Canada, New Zealand, and Japan. There was a significant difference in nationalities requiring this skill with Canada, America, and New Zealand requiring it more than that of Japan at the  $p < .05$  level for all four countries [ $F(13, 148) = 2.062$ ],  $p = .020$ ]. Post hoc comparisons using the Tukey HSD test indicated that the mean score for the clinicians from Japan ( $M = .55$ ,  $SD = .510$ ) was significantly different from that of the mean score of clinicians from Canada ( $M = .95$ ,  $SD = .218$ ), America ( $M = .87$ ,  $SD = .345$ ), and New Zealand ( $M = 1.00$ ,  $SD = .000$ ). Therapeutic Modalities is required significantly more in these three countries than that of Japan. For further analysis see Figures 5 & 6.

### **Other Analysis**

A one-way between subject's ANOVA comparing the administrative requirements of maintaining HIPAA and OSHA as a skill among the nationalities Ireland, Japan, New Zealand, Britain, and America. There was a significant difference in nationalities requiring this skill with America requiring it more than that of Ireland, Japan, New Zealand, and Britain at the  $p < .05$  level for all five countries [ $F(13, 148) = 5.414$ ],  $p = .000$ ]. Post hoc comparisons using the Tukey HSD test indicated that the mean score for the clinicians from America ( $M = .88$ ,  $SD = .323$ ) were significantly different from that of the mean score of clinicians from Ireland ( $M = .33$ ,  $SD = .485$ ), Japan ( $M = .25$ ,  $SD = .444$ ), New Zealand ( $M = .33$ ,  $SD = .492$ ), and Britain ( $M = .00$ ,  $SD = .000$ ). This result may be due in part to the fact HIPAA and OSHA are North American organizations that aim to protect patient's privacy, there may be other organizations in these countries that do this as well. See Figure 7.

A one-way between subject's ANOVA comparing whether clinicians work out of a private practice or clinic among the nationalities of Ireland, America, South Africa, Australia,

New Zealand, Japan, Canada. There was a significant difference in nationalities working out of the private sector with Ireland, South Africa, Australia and New Zealand more than that of clinicians working in America, Japan, and Canada at the  $p < .05$  level for all seven countries [ $F(13,148) = 6.439, p = .000$ ]. Post hoc comparisons using Tukey HSD test indicated that the mean score for the clinicians from Ireland ( $M = .67, SD = .485$ ), South Africa ( $M = 1.00, SD = .000$ ), Australia ( $M = .85, SD = .376$ ), New Zealand ( $M = 1.00, SD = .000$ ) had significantly more respondents working out of a private clinic than that of Americans ( $M = .17, SD = .382$ ). Post hoc comparisons using Tukey HSD also indicated that South Africa, Ireland, Australia and New Zealand had more private sector clinicians than that of Japan ( $M = .20, SD = .410$ ). Finally, Post hoc comparisons using Tukey HSD found that New Zealand had significantly more clinicians working out of private clinics than Canadian clinicians ( $M = .43, SD = .507$ ). See Figure 8.

### **Discussion**

This project aimed to find the similarities and differences between Sports Medicine professional requirements on an international level. The author hypothesized that although there would be differences between sports medicine professional's due to culture and practice location, the patients, education, and skills needed would be the same worldwide. This is supported through many of the results, including the fact that all nationalities require completing a four-year college degree to become certified. The results agree with previous research about the preparation of Athletic Trainers', Physiotherapists, and Sports Physiotherapists by the NATA (2010), Reid (2013), and Jull & Moore (2008) in requiring the completion of a four-year degree.

Not surprisingly Americans and Canadians had the highest response rate for the requirement of passing a certification test, 85.7% and 78.8% respectively. Since the Canadian Athletic Therapists Association and the National Athletic Trainers Association have a mutual



recognition agreement, the fact that both countries require testing to become certified is expected (Ferrara, 2006). This is important to note due to the fact it is unique to these two countries, and for the development of mutual recognition, other countries would need to make this a requirement as well. A similarity found between professions and nationalities that supports the hypothesis is that of continuing education or professional development. Although the number of CEU's differed, all sports medicine professionals require continuing education or continuing professional development to maintain credentialing. In this way, clinicians stay up to date on the treatment of injuries.

The fact that Canada requires the completion of an internship in order to be certified is supported by research by the Canadian Athletic Therapist Association. In order to become a Certified Athletic Therapist (CAT) one must "complete an internship of 1,200 hours while working under the supervision of a Supervisory Athletic Therapist, including 600 hours of field experience at athletic events and 600 hours of clinical experience" (CATA, 2017). While New Zealand and Ireland may encourage their sports medicine professionals to complete an internship to gain more hands-on experience, this research found that it is not a requirement to receive certification just as previous research has discovered (ARTI, 2017) (IPPTA, 2015). It can be noted that in this way Canadian Athletic Therapists receive more hands-on training than others in the sports medicine community. With these results, there is a better understanding of the credential requirements of each country. Using the similarities, a case can be made for mutual recognition. Whereas the differences should be seen as areas of weakness and discussions should begin about what changes should be made to credentialing programs for each nation.

As far as academic preparation, a difference in kinesiology requirements needs further examination. Both type of degree and nationality had an impact on kinesiology as a course

requirement. Most countries (America, Canada, Japan, New Zealand, and Australia) required the course but Europe had no reported requirement. Further research could explore the use or need for kinesiology in international sports medicine.

A difference was found between the professions of Physiotherapy and Athletic Training in the course requirement of First Aid/CPR. Previous research by Casey, Finch, Mahoney & Townsend found that the use of qualified first aiders in Australia at competitions for football were 85%, while for practices it was only 70%. These numbers fall even more when it comes to sports like netball, where use of qualified first aiders at competition are 25% and during training is 0% (2004, p.228). Although physiotherapists are not on site to use First Aid/CPR it is an important skill to have in any situation and therefore programs that do not require this course need to be modified. Community sports organizations may not be at the point where they can have a certified sports medicine professional at every game and practice. However, having a First Aid/CPR responder at every competition should be a minimum requirement for the safety of participants. Similarities were found in the required courses of Injury Evaluation and Rehabilitation. These courses are requirements for all sports medicine professional's world-wide for it is the very core of these professions. The purpose of the sports medicine professionals is to evaluate an injury and return their patient to full function. Without the knowledge of injury evaluation and rehabilitation professionals would not be properly prepared. These results give us the academic preparation requirements of international sports medicine professionals. The following table depicts the educational courses required for each nationality- see table 1.

Table 1 Nationality and Education Courses Required

What courses are required?						
Nationality	FirstAid/CPR	A&P	Kinesiology	Rehab	Injury Eval	Taping

Irish	X	X	X	X	X	X
American	X	X	X	X	X	X
Italian	X	X	X	X	X	X
South African	X	X		X	X	
Canadian	X	X	X	X	X	X
Japan	X	X	X	X	X	X
Australian	X	X	X	X	X	X
Spain		X	X	X	X	X
New Zealand	X	X	X	X	X	X
Denmark	X	X	X	X	X	X
British	X	X	X	X	X	X
European	X	X		X	X	X
Asian	X	X	X	X	X	X
Other	X	X	X	X	X	

The differences in competency requirements for sports medicine professionals were mainly in areas such as: Rehabilitation, Therapeutic Modalities, Injury Evaluation, and Taping/Bracing. While clinicians who work out of private practices may use evaluation and preventative taping occasionally, these two skills are more of an asset to on-site personnel. On-site professionals (Athletic Trainers) need to have the skill set to evaluate an injury immediately after the injury occurs, and be able to tape for the prevention of future injury (NATA, 2010).

The finding that sports medicine professionals had significant differences in the skill of diagnosis and developing a rehabilitation plan is supported by previous research. Clinicians who work out of private clinics are more likely to be given a diagnosis and asked to develop a rehabilitation plan (Domes & Krueger, 2015). Comparing previous research and the results found

in this article we can see that professionals who work in the clinical setting need to practice their diagnosis and injury evaluation skills. While the skills of rehabilitation and therapeutic modalities are commonly used in the clinical setting to treat injuries (Reid, 2013). With this finding it becomes apparent why countries with the majority of their clinicians working in the clinical setting have more practice in rehabilitation and therapeutic modalities than they do in injury evaluation. Therefore, a significant finding in all four areas (evaluation, rehabilitation, therapeutic modalities, and taping/bracing) are due to the setting in which each profession practices. These results show sports medicine professionals from each nation their weakness. The results should be used to strengthen sports medicine programs. It could even be taken one step further to establish global programs, so that all professionals would be trained the same way. These results help answer the final research question about the competencies of international sports medicine professionals.

Other analysis found a significant difference in the maintenance of HIPAA and OSHA. The difference found here is based on the way the question was asked. While sports medicine professionals from Ireland, Japan, New Zealand and Britain must comply with the laws and regulations of their country, they do not specifically have HIPAA & OSHA laws (ARTI, 2017). The regulation of these professions through following the federal laws put forth for medical professionals shows us the level of professionalism each nation upholds. The fact that all nations already have and follow patient privacy and protection laws makes transitioning to a global practice much easier. For this aspect of the sports medicine profession is essential to developing good sports medicine programs and providing care to patients.

Another significant finding was between the practice locations of the sports medicine professionals. One way to understand this finding is by looking at where each profession most

often practices. Sports Physiotherapists establish clinics in communities to treat athletes. Previous research suggests that physiotherapy clinics are owned privately, by a sporting organization, or by health centers. (Bulley & Donaghy, 2008). While athletic trainers do work in clinics, their practice location is more likely to be in a hospital clinic, at a sporting event, or in an Athletic Training Room, which were the other three options for this question. This is one of the biggest areas that needs to change. Physiotherapists need to begin branching outside of clinics, and begin working events. The benefits of this would be two-fold, in that competitors would receive on-site quality care, and physiotherapists would become a trusted face in the community. Members of the community would become comfortable with approaching these professionals with musculoskeletal injuries and trust their medical opinion.

The patient population of sports medicine professionals can vary drastically depending on the practice setting. Those who spend the majority in clinics would see a wide range of active inactive individuals. A strength of this research was the majority of clinicians (67.9%), despite differences in practice location, worked with athletes. If they had been trained to work with geriatric and pediatric patients, the skills and education could have been drastically different from Athletic Trainers. While measures were taken to target sports medicine professionals specifically, there was a possibility sports physiotherapists worked with other populations (geriatrics, pediatrics and other) and this could have altered the results.

Out of all the nationalities, Canada, America, and New Zealand hold the most requirements for their sports medicine professionals. By looking at the results, these three countries have notably and consistently the most requirements for education, standards of care and credentialing. Currently America, Canada, and Ireland have a mutual recognition agreement for Athletic Trainers. Research showed that Europe, Australia, and New Zealand have similar

arrangements for physiotherapists (Bulley & Donaghy, 2005). It would seem that a mutual recognition agreement should be created between new countries and the professions of Athletic Training and Physiotherapy. Despite the differences found in this research, a set of core competencies were found for all nationalities and professions represented. These results support the hypothesis that core values would be found between the sports medicine professionals. These results could be used to help the formation of mutual recognition among nations. There are areas where the significant differences in requirements could become a hindrance to the development of such an agreement, but by knowing where these differences lie these professions can adjust its requirements and training.

### **Limitations**

This study is an initial step towards describing some of the sports medicine practice standards and requirements between different countries. But other sports medicine communities must be open to creating these agreements. Throughout this research it was made obvious that convincing countries they need on-site clinicians is nearly impossible. These countries are happy with the treatment they receive but they do not have the experience of having a clinician on-site to compare it to. The limitations to the current research lie in the participants. Countries like Ireland, America, Canada, Japan, Australia had 12-50 respondents, in contrast, countries like Italy, South Africa, Spain, Denmark, Britain had only 2-4 responses. Even when countries were grouped together by continent like Europe, Asia, and other the responses were low. The most respondents came from America (52), Canada (21), and Japan (20), this provided good data, but these three countries have a mutual recognition agreement already in place. Meaning the training and requirements are already similar enough in nature for sports medicine professionals to go to these countries and work.

The use of t-tests to analyze degree type and professional title detracted from the research because it did not help answer the research questions. More ANOVA's should have been performed in order to better understand the differences between sports medicine professionals in each country, rather than analyzing the differences between degree and title. Another limitation occurred because of the t-tests that were run. When comparing professional title, only 6 of the total 162 respondents were physical therapists. Therefore, the author chose to not analyze the differences for this group. Essentially, the six participants were removed from analysis for the T-tests but were included in the running of ANOVA's.

Since the investigator had a short amount of time to create and distribute the survey, the survey was not translated into any other language. There may have been a greater response rate had clinicians taken the survey in their native language. The terminology of the survey was also American, since most of the questions were taken from the BOC's Role Delineation study and practice analysis. For example, a question was asked about the number of Continuing Education Units (CEU's) were required each year to maintain accreditation, in Europe these are referred to as Continuing Professional Development (CPD's). The language, terminology and nature of the survey all contributed to the Cronbach Alpha being on the lower side. While the survey was still valid, it could have been improved upon so that all participants could understand what was being asked of them. Another limitation was, that regardless of nationality, 69.1% of respondents were Athletic Trainers. Comparisons were still able to be made but more accurate comparisons may have been found with further diversified sports medicine professional participants. Further research could also analyze the origin of a clinician compared to the Geographic's of where they practice. This was not explored in this project due to the small number of participants who were

in a new country. Further research should be done to solidify the need for global mobility in the sports medicine world.

### **Conclusion**

This research identifies the significant similarities and differences between the identified sports medicine professionals, more specifically, the educational requirements, standards of care and credential requirements for Athletic Trainers, Sports Physiotherapists, and Physical Therapists. This research provides the sports medicine community a better understanding of the requirements to receive credentials for each profession and nationality thereby making mutual recognition agreements between countries and professions easier to achieve. This research is the first step in establishing a set of global health competencies, similar to that of the nursing community, which will begin to create more international mobility for sports medicine professionals worldwide.



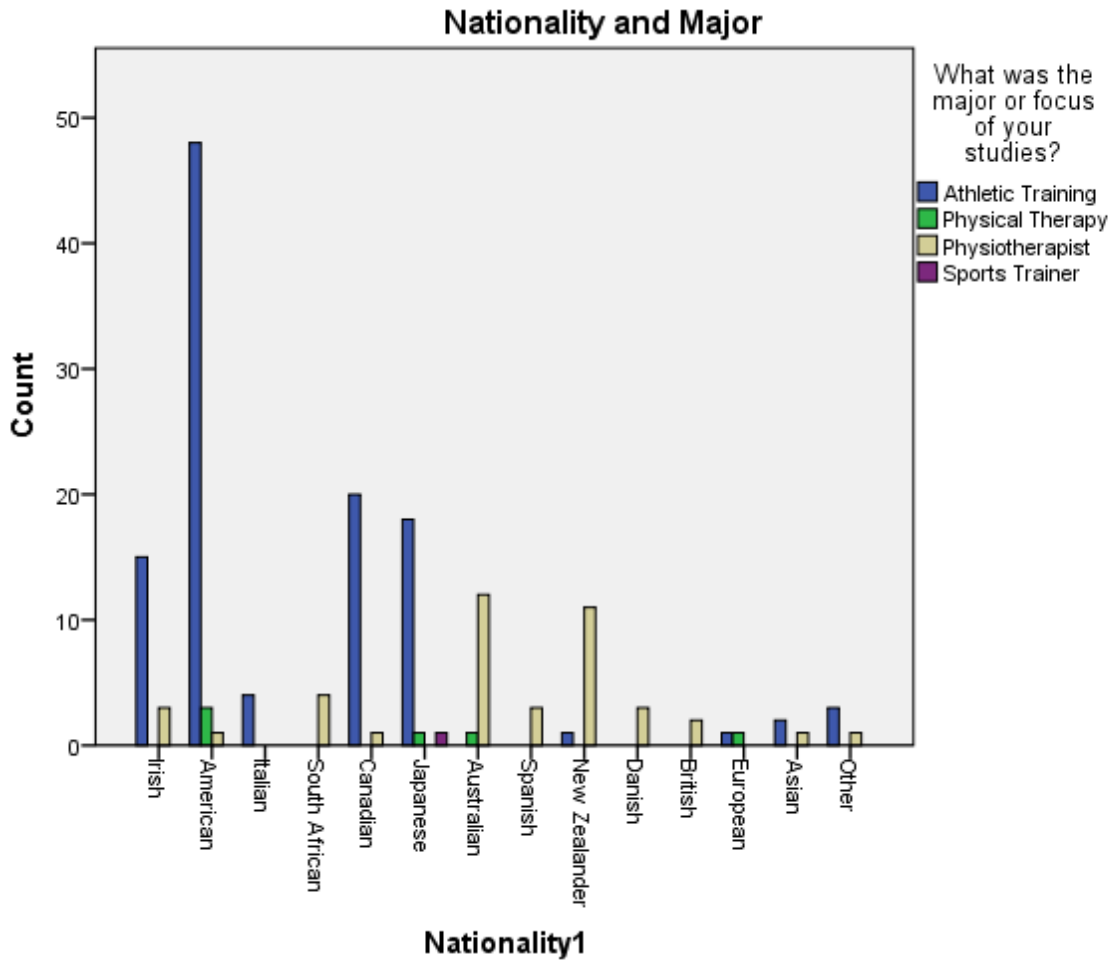
Table 2: Respondent Demographics

Participant	Category	Number of Participants	%	Participant	Category	Number of Participants	%									
Age	20-40	110	67.9%	Ethnicity	European/Caucasian	12	74.7%									
	41-60	47	29%		African	6	3.7%									
	61-80	5	3.1%		Hispanic	4	2.5%									
Gender	Male	92	56.7%		Asian	24	14.8%									
	Female	69	42.6%		Middle Eastern	3	1.9%									
Degree	Bachelors/Honors	56	34.6%		Other	4	2.5%									
	Masters	89	54.9%		Nationality	Irish	18	11.1%								
	DAT/DPT	3	1.9%			American	52	32.1%								
	PhD	12	7.4%			Italian	4	2.5%								
Country	Practice_Location	Ireland	U.S.	South Africa		Japan	Spain	China	Australia	New Zealand	England	Europe	Other	South African	4	2.5%
														Canadian	21	13%
														Japanese	20	12.3%
														Australian	13	8%
														Spanish	3	1.9%
														New Zealander	12	7.4%
					Danish									3	1.9%	
					British									3	1.9%	
					European									2	1.2%	
					Asian									3	1.9%	
					Other									4	2.5%	

Table 3: Professional Demographics

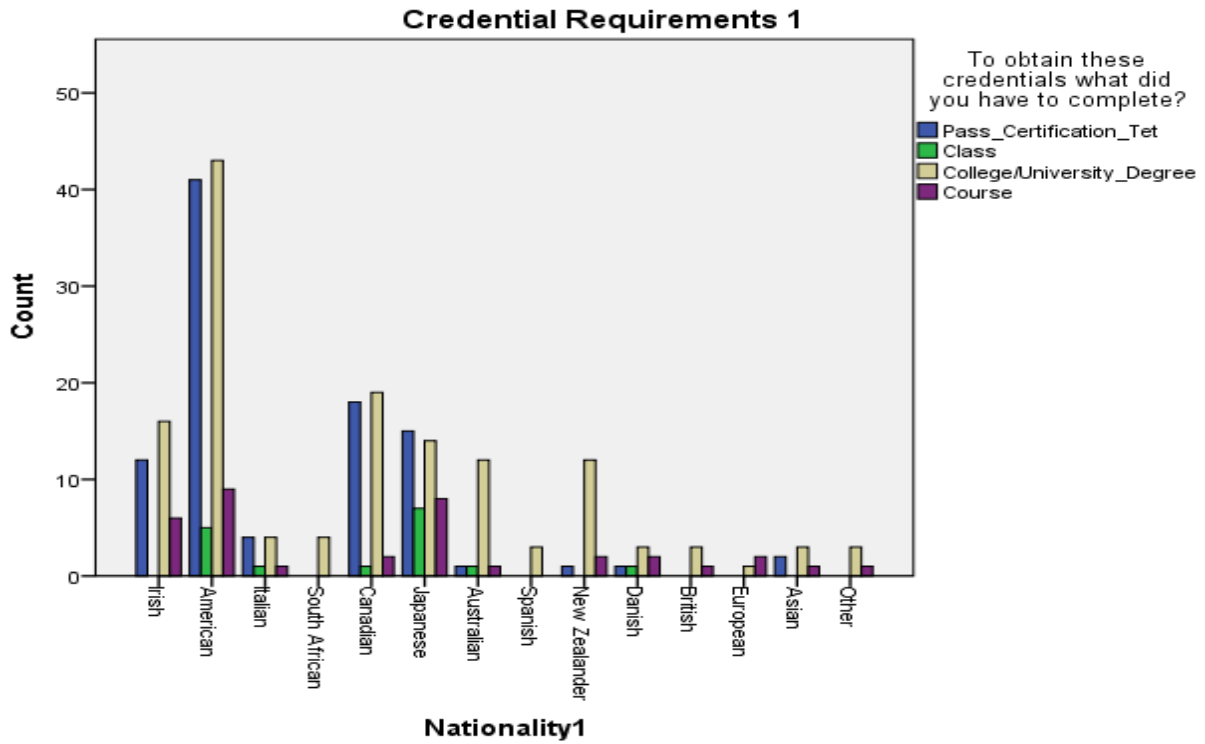
Participant	Category	Number of Participants	%	Participant	Category	Number of Participants	%
Origin	From Country	134	82.7%	CEU's/CPD	0 Per Year	16	10.5%
	Job Brought them	25	15.4%		7 Per Year	7	4.6%
Major	Athletic Training	112	69.5%		20 Per Year	20	13.1%
	Physical Therapy	6	3.7%		25 Per Year	65	42.5%
	Physiotherapy	42	26.1%		30 Per Year	16	10.5%
	Sports Trainer	1	.62%		100 Per Year	5	3.3%
Further Training	Yes	49	30.2%		Other	24	15.7%
	No	58	35.8%				
	Emergency Care	25	15.4%				
	Education/Teaching	5	3.1%				
	Specialization	7	4.3%				

Figure 1: Nationality and Major



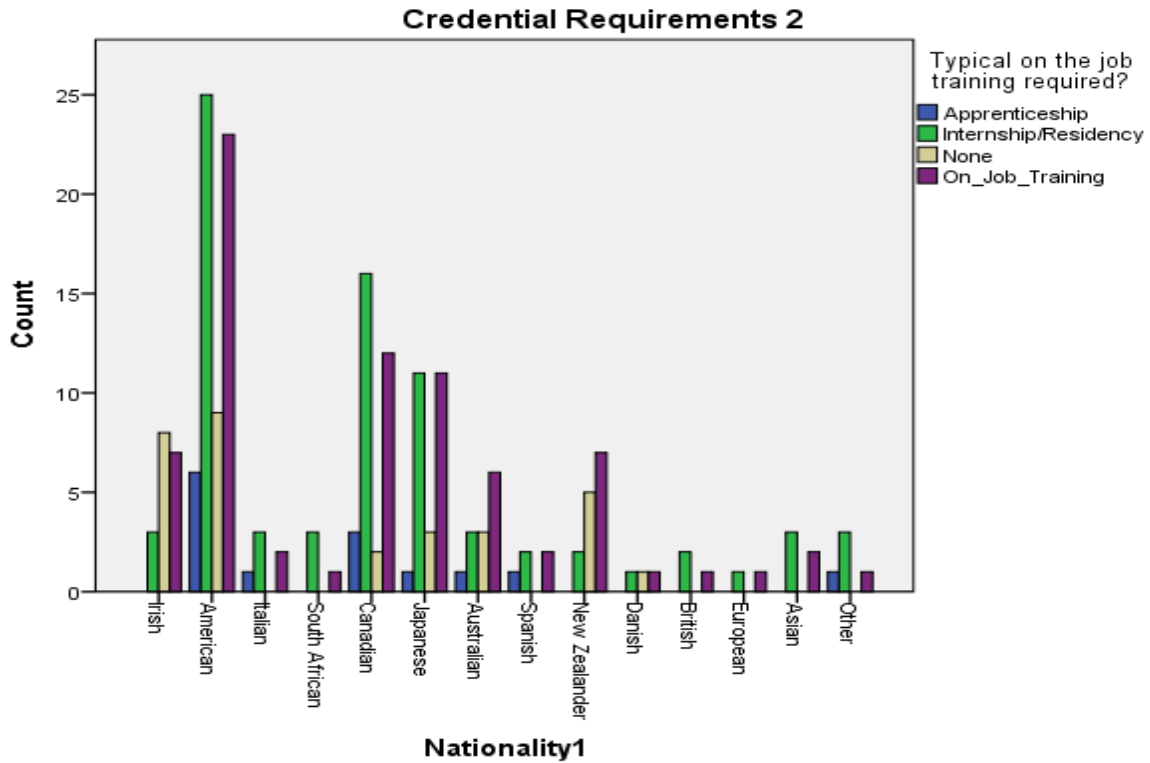
The graph depicts that Athletic Trainers are mostly from Ireland, America, Italy, Canada, Japan, and the rest of Asia. Sports Physiotherapists are from South Africa, Australia, Spain, New Zealand, Denmark, and England.

Figure 2: Credential Requirements



Course Requirements 1 depicts what was required to be completed in order to receive certification.

Figure 3: On-the-job training



Credential Requirements 2 depicts the on the job training that is required for each nation represented. As seen America, Canada, and Japan have the most responses stating that an internship is required. While Australia and New Zealand had more responses for the requirement of on-the job training, with only a few internships.

Figure 4: Course Requirements

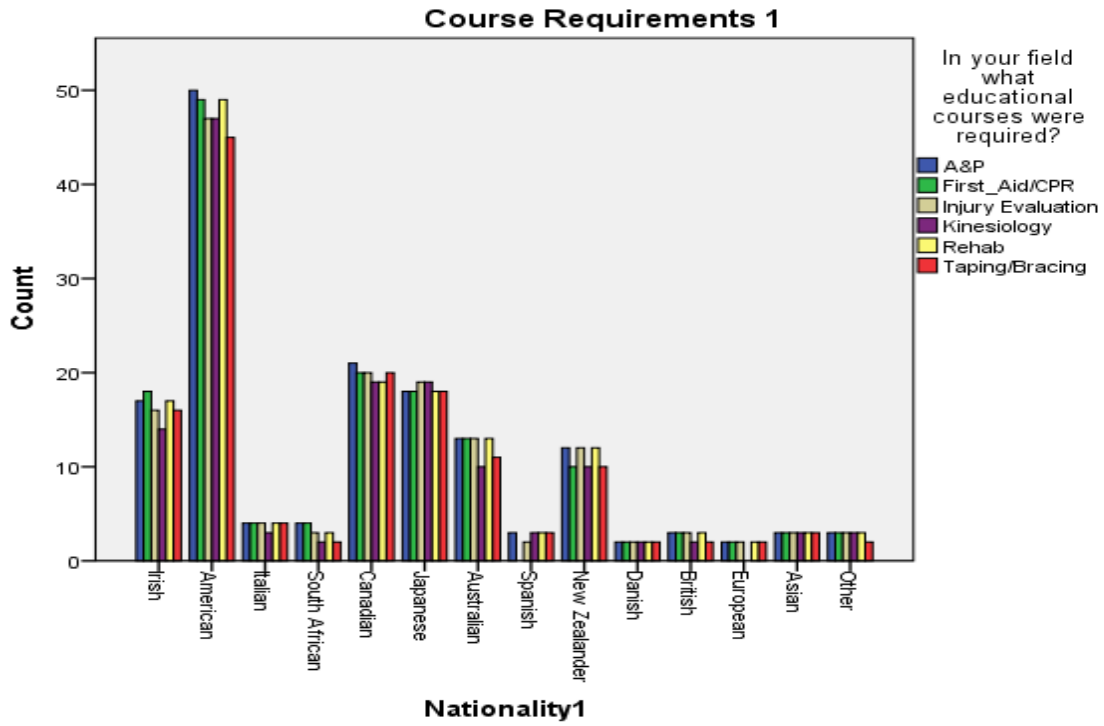


Figure 5: Skills in Preventing Injury

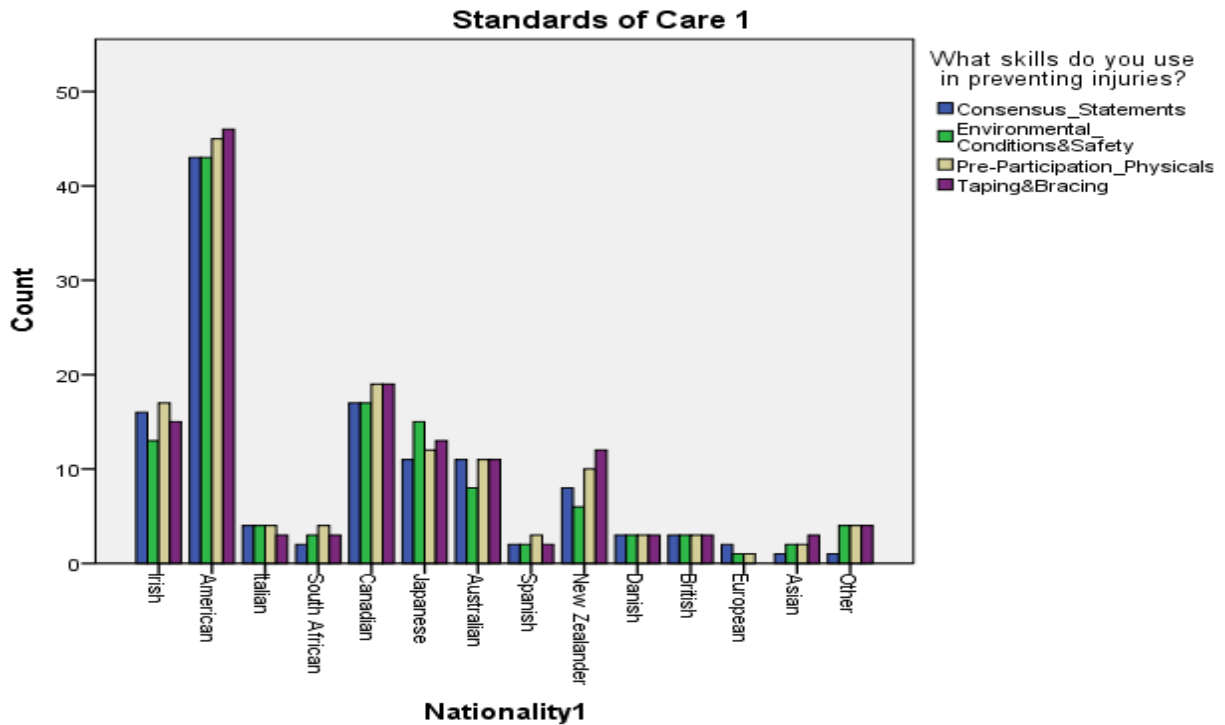


Figure 6: Skills in Rehab

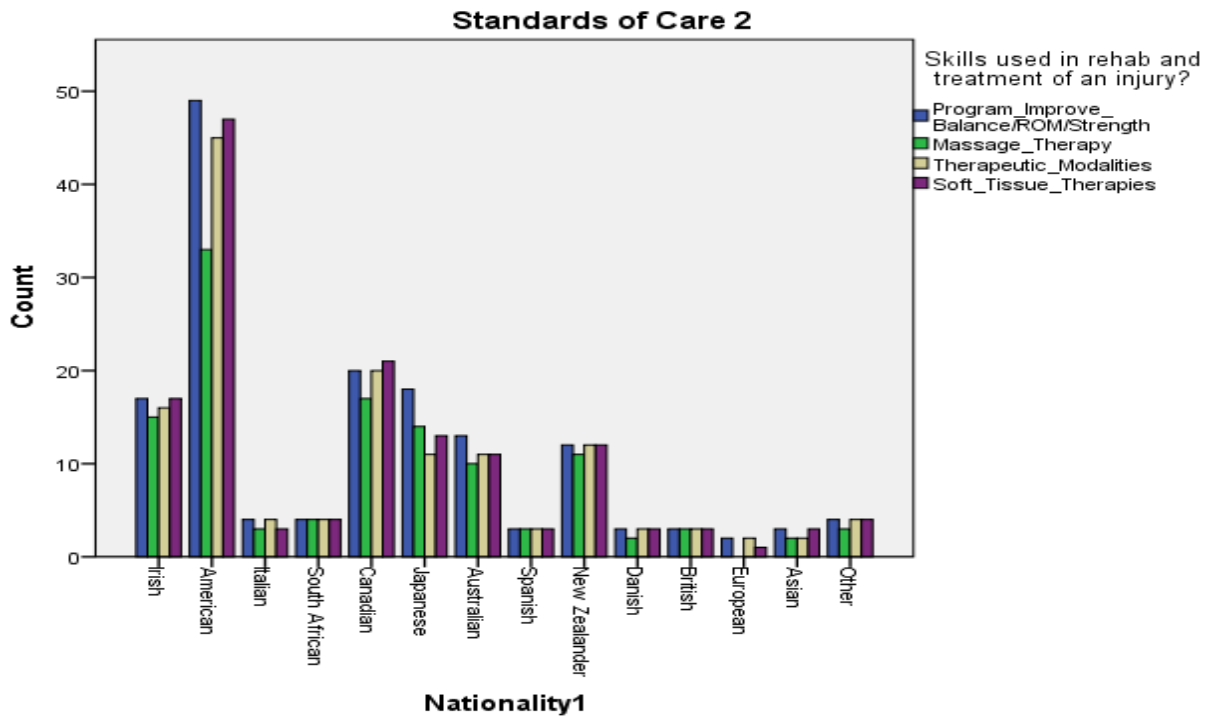


Figure 7: Administration Required

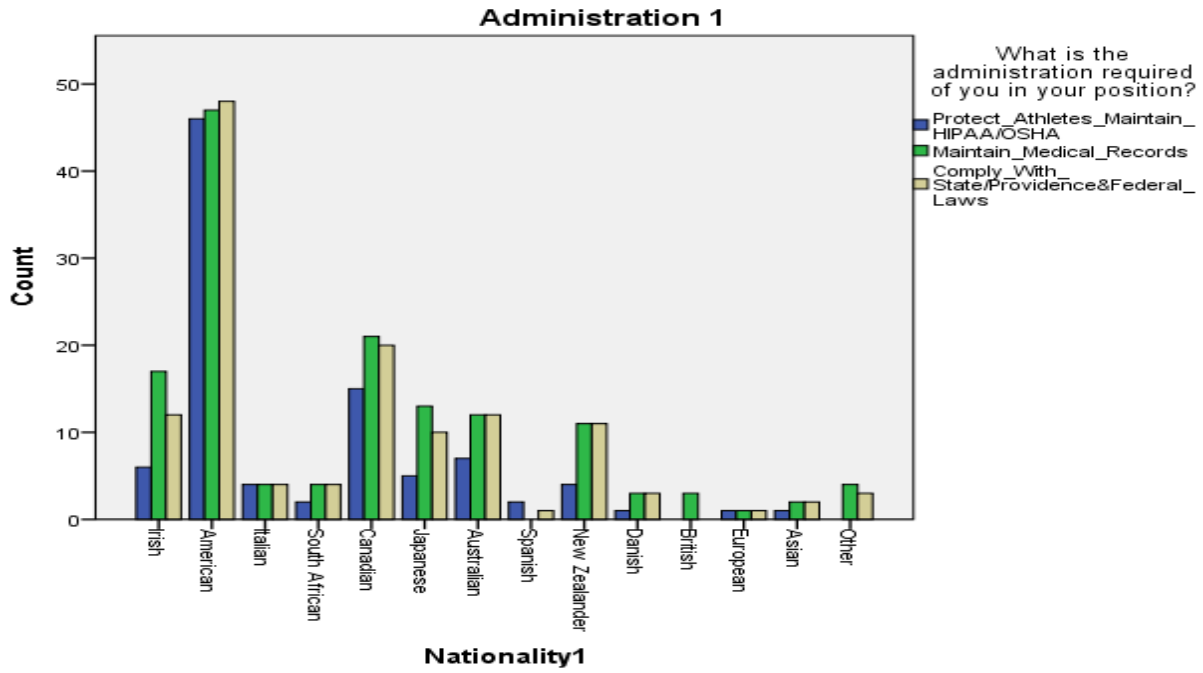
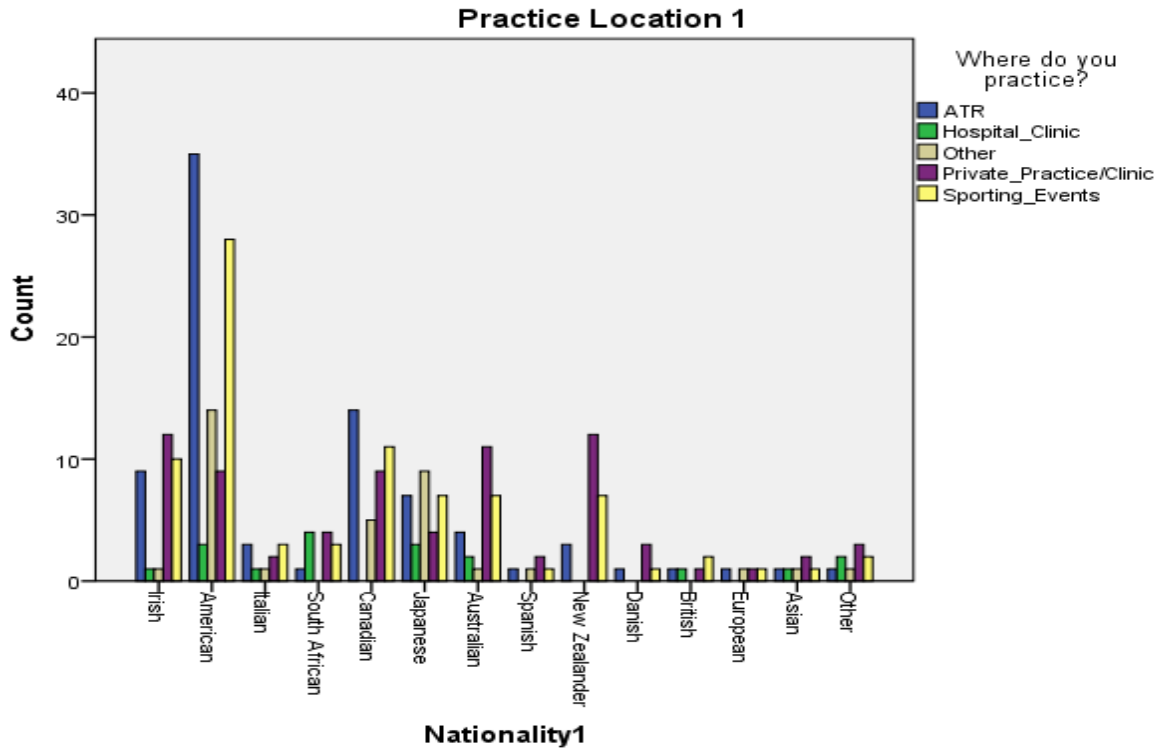


Figure 8: Practice Location





Appendix

Q1. I have read the attached consent document and understand by clicking continue I am agreeing to participate in this survey (to discontinue at any time- exit out of this survey screen)

Continue

**Demographics**

Q2. Age?

Q3. Gender?

Male

Female

Q4. What is the highest degree or level of schooling you have completed?

Q5. What was the major or focus of your studies?

Athletic Training

Physical Therapy

Physiotherapy

Sports Trainer

Q6. What is the geographic region in which you practice sports medicine?

Q7. What is your ethnicity or country of origin?

Q8. What is your nationality?

Q9. What is the primary population that you serve?

Athletes

Pediatrics

Geriatrics

Other

Q10. Are you an ex-patriot?

Yes

Not

Q11. Are you originally from the country in which you practice or has the job brought you to live in the area?

**Credentialing**

Q12. What Credentials are required to work in your field? (select all that apply)

Special Credentials for the population worked with

Special Credentials for the country in which you work

Special Credentials for the state in which you work

Q13. To obtain these credentials what did you have to complete? (select all that apply)

Course

Class

College/University Degree

Pass a Certification Test

Q14. Are there Continuing Education Requirements in order to maintain your credentials?

Yes

No

Q15. How many Continuing Education Credits are required per year?

Q16. Aside from CEU's is there further training you can or are required to complete?

Q17. Are your credentials recognized on a national level?

Yes

No

Q18. Are your credentials recognized as International Credentials?

Yes

No

Q19. In what countries are your credentials recognized?

**Education**

Q20. What is the typical education most workers need to enter an occupation?

Doctoral or Professional Degree

Master's Degree

Bachelor's Degree

Associate's Degree

Postsecondary Nondegree

Some college, no degree

High School Diploma

No formal education

Q21. Work experience needed in related occupation?

5 or more years

Less than 5 years

None

Q22. Typical on the job training required (select all that apply)

Internship/Residency

Apprenticeship

On the job training

None

Q23. In your field, what educational courses were required (select all that apply)

First Aid & CPR

Anatomy & Physiology

Kinesiology

Rehabilitation

Injury Evaluation

Taping & Bracing

**Competencies**

Q24. Competencies required for your profession (select all that apply)

Injury and Illness Prevention and Wellness Protection

Clinical Evaluation and Diagnosis

Immediate and Emergency Care

Treatment and Rehabilitation

Organizational and Professional Health and Well-being

Performance Enhancement

Research and Evidence-Based Practice

Q25. What skills do you use in preventing injuries? (select all that apply)

Taping and Bracing

Perform Pre-participation Physical

Interpret Environmental Conditions for Safety of Players

Stay up to date on Consensus Statements

- Q26. Steps you would use in the assessment and evaluation of an injury? (select all that apply)
- Collect a pertinent medical history
  - Conduct a physical exam
  - Investigate possible differential diagnosis
  - Create a treatment plan
- Q27. How do you, within your profession provide Emergency care? (select all that apply)
- Perform First Aid & CPR
  - Design and Implement Emergency Action Plan
  - Call EMS
- Q28. Skills used in Rehabilitation and Treatment of an Injury? (select all that apply)
- Create a Program to improve Balance, ROM, Strength
  - Massage Therapy
  - Therapeutic Modalities
  - Soft Tissue Therapies
- Q29. What is the administration required of you in your position? (select all that apply)
- Comply with state/providence, Federal Laws
  - Protect Athletes by maintaining HIPAA & OSHA standards
  - Maintain Medical Records
- Q30. Where do you practice? (select all that apply)
- Private Practice/Clinic
  - Hospital Clinic
  - Athletic Training Room
  - Sport Events/Practices
  - Other

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