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INTER AND INTRA-RATER RELIABILITY

OF DANCE SCREENING TOOL

By

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A doctoral project submitted in partial fulfillment
of the requirements for the

Doctor of Physical Therapy

Department of Physical Therapy
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The Graduate College

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Doctor of Physical Therapy
Department of Physical Therapy

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Abstract

Previous literature has indicated that injury rates of ballet and modern dancers are among the highest of any physical activity. These injuries can be detrimental to the athlete and can also result in financial burden for dance companies due to time loss related to injuries. Preventative intervention aimed at those who are most at risk for injury can be effective at reducing the cost associated with lost time due to injury. An effective approach to identifying those most at risk for dance related injuries is to administer a functional movement screen. One such movement screen is the ballet-based Dance Technique Screening Instrument, developed by the Director of Physical Therapy Services at the Alvin Ailey American Dance Theater, Dr. Shaw Bronner. The purpose of this study was to investigate the intra and inter-rater reliability among physical therapists, physical therapy students, athletic trainers, and dance instructors with and without formal dance training in the scoring of the Dance Technique Screening Instrument. Participants were asked to watch videos of ballet dancers performing dance sequences included in the Dance Technique Screening. Raters scored each video using the Dance Specific Screening Instrument. Two weeks later, raters were asked to complete a second round of scoring of the same videos. This data was used to determine both inter and intra-rater reliability of the Dance Technique Screening Instrument among the subgroups. Results indicated that the inter-and intra-rater reliability for the total scores among all raters and within the individual profession subgroups ranged from good (ICC of 0.75-0.9) to excellent (ICC of >0.9) indicating the Dance Technique Screening Instrument is reliable among professionals with and without formal dance training. These findings demonstrate that this specific screening tool could be a utilized by a variety of professionals to identify dancers at risk for future injury.

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Chapter 1: Introduction

Professional dance companies reported 67% to 95% of their dancers were injured annually indicating that injury rates of ballet and modern dancers are among the highest of any physical activity.[1,2,3,4] Professional dancers miss a mean of 28 days per injury. The number of days missed due to injury are not only problematic for the dancers affected by injury but can also come at a high cost to the dance companies that employ these dancers.[5] Injuries to dancers in professional dance companies create a large financial burden to the companies behind the production. As a result, many professional dance companies employ medical professionals to oversee the health and physical fitness of their dancers in an attempt to minimize costly injuries. One study reported that a large dance company saved an estimated $1.2 million per year by implementing an in-house medical and physical therapy program.[1,3]

Though the high prevalence of dance injuries creates a large strain on the dance community, there is no widely used injury screening tool for ballet and modern dancers. Screening tools specific to dance were developed in the past, however these tools are not extensively utilized to assess injury risk. There is a lack of adequate research on the validity and reliability of injury screening tools for the dance population. It is difficult to accurately identify and appropriately manage dancers who may be at risk for injury without a valid and reliable injury screening tool. In 2004, the International Association for Dance Medicine and Science (IADMS) launched an initiative to investigate the current research and clinical practice centered around dance injury screening procedures, identification and reporting.[6,7] This project was established in order to make recommendations for the development and utilization of standardized injury reporting and movement screening methods.[6,7] The IADMS initiative states

that it is necessary to formalize dance screening processes and track future injuries in order to determine risk factors and predict when dancers may sustain injuries.[6,7]

When assessing pre-professional dancers as opposed to professional dancers, it is essential to consider the age and physical maturity of the dancer. The term pre-professional refers to dancers who are training in order to establish a professional dance career. Typically, pre-professional dancers range from adolescents to young adults. The current literature indicates that injury rates among the pre-professional dance population are among the highest.[5] This may be due to the younger dancers' skeletal immaturity and their lack of formal dance experience.[8] A study by Bowerman et al. explored the effect that age and dance exposure had on injury rates. They stated that the high training volume and repetition required of young, maturing dancers places them at an increased risk for injury.[8,9]

Specific risks factors for pre-professional dance injuries have recently been identified. These risk factors consist of tightness in the muscles of the lower extremities, multiple injuries in the past year, joints that are either hypermobile or hypomobile, and low scores on dance technique motor control testing.[10,11] The presence of these identified risk factors can predispose dancers to many acute and chronic injuries.[10,11] Despite the identification of these specific risk factors, no single screening process is widely used to establish which dancers could benefit from a preventative exercise intervention.[11,12] Researchers have attempted to use existing movement screening tools, such as the Functional Movement Screen (FMS) to evaluate dancers, but these studies failed to identify a threshold score that consistently identified increased risk of injury in professional dancers.[13,14] While Kropa et al.[14] chose to focus on professional dancers, McPhearson et al.[15] focused on university level pre-professional dancers and concluded that there was no significant difference in FMS scores between those who were injured and those

who were not. A standardized dance-specific assessment tool can potentially identify dancers at risk for injury, so they could be provided with a personalized preventative training and treatment program.

The ballet-based Dance Technique Screening Instrument was developed in 1995 by Dr. Bronner PT, PhD, OCS, Director of Physical Therapy Services at the Alvin Ailey American Dance Theater.[16] Previous research on this dance screening tool found that the intra and inter-rater reliability was high among all raters for both physical therapists and student physical therapists *with a dance background.*[16] In that study, physical therapists demonstrated a slightly higher intra-rater reliability in comparison to the student physical therapists.[16] The inter and intra-rater reliability of the screening tool when evaluated by licensed physical therapists, physical therapy students and licensed athletic trainers with or *without a dance background,* as well as professional dance instructors was not tested and represents a gap in knowledge. Physical therapists, physical therapy students, and athletic trainers without a dance background need to be tested because of their involvement in the care of dancers and their advanced knowledge of biomechanics, posture and movement analysis. Though these professionals have no formal dance training there is a high likelihood that they may be in a setting where they might be required to administer pre-participation dance screens clinically. If this screening tool is found to be reliable among professionals without formal dance training, it may aid in ensuring that this dance screening tool can be widely utilized by a variety of professionals. This would align with the IADMS initiative to create a standardized screening procedure that can accurately identify risk factors in dancers. A reliable dance specific screening tool may not only prompt further dance research, but it may be useful in order to identify dancers at risk of injury, and ultimately help dancers prevent future injuries.

Purpose/Objectives

The purpose of this study was to investigate the intra and inter-rater reliability among physical therapists, physical therapy students, athletic trainers and dance instructors in the scoring of the ballet-based Dance Technique Screening Instrument. We hypothesize that the ballet-based Dance Technique Screening Instrument will be reliable among participants with and without formal dance training.

Chapter 2: Methods

Participants:

Dance instructors, licensed physical therapists, physical therapy students and athletic trainers were recruited for this study through professional organizations including the Performing Arts Special Interest Group (PASIG) in the American Physical Therapy Association (APTA) Academy of Orthopedic Physical Therapy (AOPT), the National Athletic Trainers' Association (NATA), the Royal Academy of Dance (RAD), and the Cecchetti Council of America. Raters with *or* without a dance background were recruited for this study. Participants were placed into two subgroups that were defined based on profession and level of dance experience as follows:

Sub-Group 1: Licensed physical therapists, or licensed athletic trainers with dance medicine or ballet/modern dance background, or current physical therapy students with ballet/modern dance experience. Pilates trainers with ballet/modern dance experience, or dance educators (primarily ballet training) with a strong anatomical, kinesiology background.

Sub-Group 2: Licensed physical therapists, or licensed athletic trainers without dance medicine or ballet/modern dance background, or current physical therapy students without ballet/modern dance experience.

Inclusion criteria for participants in sub-group 1 included a current license in physical therapy (DPT), *or* athletic training (LAT), *or* current enrollment in an accredited DPT program as a student physical therapist (SPT), *and* at least one year of formal dance training *or* Pilates, and Dance instructors must have had at least one year experience in formal dance training. Sub-group 2 participants must have had a current license in physical therapy (DPT) *or* athletic training (LAT) *or* be currently enrolled in an accredited DPT program (SPT). All participants

must speak and understand English, have access to the internet, and have the ability to watch and analyze a series of videos. Sample size was determined for the test-retest reliability for each group, R_0=0.00, R_1=0.60 based on our hypothesis, α=0.05, power=0.80 to be 6 raters.[17]

Procedure:

After participants agreed to partake in the study, secure links to surveys and videos of dance sequences performed by professional dancers were disseminated via email. The surveys and videos were accessed on SurveyGizmo. Survey Gizmo is a secure platform that used SSL (HTTPS) connection, is HIPPA compliant, and met Safe Harbor guidelines for privacy. The subjects first completed a demographics form that included information about their professional experience and dance training. All participants were required to watch two training videos that defined common dance terminology and movements prior to completing the screen. Then, participants were asked to watch and score four dance sequences that include: the grand plié in 2nd position, dèveloppé à la seconde, passé relevé balance, and jumps in 1st position. The subjects were asked to use the ballet-based Dance Technique Screening Instrument to grade each sequence as either having a motor control or alignment problem (one point) or no problem (zero points). Each of the four dance sequences being scored by the raters were evaluated on the following five items: 1) lumbopelvic stability 2) hip turnout 3) knee placement 4) ankle-foot alignment and 5) 'sitting into the stance hip' (specific to dèveloppé à la seconde sequence). Each participant watched and scored the videos of 10 dancers. Once the initial scoring was completed, the subject was sent a second email. Participants were asked to complete a second round of scoring two weeks after they completed the first round of scoring. Subjects were told to review the training videos *as needed*. Re-watching the training videos was considered optional for all

groups for the second round of testing. The data was then used to determine both inter and intra-rater reliability of the Dance Technique Screening Instrument among the subgroups.

Statistical Analysis:

Data were exported from SurveyGizmo into SPSS (SPSS v.23, IBM Corp, Armonk, NY) to calculate the inter and intra-rater reliability of the dance-based Dance Technique Screening Instrument screening tool. The intraclass correlation coefficients (ICC) were calculated for each dance sequence and a total score for all four dance sequences. This was calculated overall and among the individual professions with or without formal dance training. Intra-rater reliability was determined using a two-way mixed effect model and inter-rater reliability was determined using a two-way random effect model.[18]

Chapter 3: Results

Thirty-six professionals participated in the inter-rater reliability study. These raters included 12 PTs with dance training (21±12.5 years of dance training), 9 PTs without dance training, 6 SPTs with dance training (19 ± 5.9 years of dance training), 3 SPTs without dance training, 1 AT with dance training (35 ± 0 years of dance training), 6 ATs without dance training and 5 dance instructors (20 ± 3.9 years of dance training) (Table 1). Twenty-five of these raters finished the second round of testing for the intra-rater test-retest reliability.

The inter-rater reliability for all raters for total scores was excellent (ICC=0.98, CI_{95}=0.96-0.99) (Table 2). The group analyses for inter-rater reliability revealed good to excellent reliability for professionals with and without formal dance training (ICC=0.87-0.94) (Table 2). The reliability scores for all-rater inter-rater reliability for each dance sequence were excellent (ICC=0.95-0.98) (Table 2). The individual group analyses for each dance sequence revealed moderate (ICC of 0.5-0.75) to excellent (ICC of >0.9) inter-rater reliability.

The intra-rater reliability for all raters for total scores was good (ICC=0.86, CI_{95}=0.86-0.89) (Table 3). The group analyses for intra-rater reliability revealed good to excellent reliability for professionals with and without formal dance training (ICC=0.78-0.92) (Table 3). The reliability scores for all-rater intra-rater reliability for each dance sequence were good (ICC=0.76-0.80) (Table 3). The individual group analyses for each dance sequence revealed moderate (ICC of 0.5-0.75) to excellent (ICC of >0.9) intra-rater reliability.

Table 1. Demographics of Raters

	All	PTs with Dance Background	PTs without Dance Background	SPTs with Dance Background	SPTs without Dance Background	ATs with Dance Background	ATs without Dance Background	Dance Instructors
Subjects (n)	36	12	9	6	3	1	6	5
Ages, yrs	31.06±8.09	34.67±.7.78	35.78±12.02	25.67±3.20	26.00±0	40.00±0	40.00±1	24.20±3.56
Worked with dancers, yrs	4.69±6.08	10.00±7.08	1.89±3.14	3.67±4.84	0	8.00±0	0.67±1.21	5.20±4.38
Dance Training, yrs	11.13±12.56	21.17±12.48	0	19±5.87	0	35.00±0	0	19.60±3.91

Table 2. Inter-Rater Reliability

	Test 1	ICC (95% CI)
Total		
All	9.65±4.37	0.98 (0.96-0.99)
PTs with Dance Background	10.33±4.34	0.93 (0.84-0.98)
PTs without Dance Background	8.62±3.81	0.94 (0.86-0.98)
SPTs with Dance Background	10.30±3.91	0.93 (0.84-0.98)
SPTs without Dance Background	9.07±4.30	0.93 (0.78-0.98)
ATs without Dance Background	9.12±4.87	0.87 (0.70-0.96)
Dance Instructors	10.54±4.34	0.89 (0.74-0.97)
Plié		
All	2.17±1.47	0.97 (0.93-0.99)
PTs with Dance Background	2.28±1.54	0.88 (0.73-0.97)
PTs without Dance Background	1.97±1.52	0.88 (0.71-0.96)
SPTs with Dance Background	2.30±1.26	0.90 (0.75-0.97)
SPTs without Dance Background	2.20±1.45	0.78 (0.37-0.94)
ATs without Dance Background	2.28±1.63	0.83 (0.58-0.95)
Dance Instructors	2.18±1.35	0.84 (0.61-0.96)
Dèveloppé		
All	2.09±1.71	0.95 (0.89-0.98)
PTs with Dance Background	2.40±1.72	0.86 (0.70-0.96)
PTs without Dance Background	1.67±1.36	0.81 (0.56-0.95)
SPTs with Dance Background	2.28±1.63	0.84 (0.63-0.96)
SPTs without Dance Background	1.63±1.27	0.84 (0.54-0.96)
ATs without Dance Background	1.87±1.98	0.59 (0.01-0.88)
Dance Instructors	2.30±1.74	0.73 (0.34-0.92)
Passé relevé balance		
All	2.75±1.44	0.98 (0.95-0.99)
PTs with Dance Background	2.77±1.39	0.93 (0.84-0.98)
PTs without Dance Background	2.57±1.41	0.93 (0.83-0.98)
SPTs with Dance Background	2.80±1.42	0.90 (0.76-0.97)
SPTs without Dance Background	3.00±1.36	0.72 (0.19-0.93)
ATs without Dance Background	2.50±1.62	0.80 (0.52-0.94)
Dance Instructors	3.18±1.38	0.86 (0.65-0.96)
Jumps		
All	2.64±1.31	0.96 (0.90-0.99)
PTs with Dance Background	2.88±1.26	0.89 (0.75-0.97)
PTs without Dance Background	2.42±1.25	0.82 (0.59-0.95)
SPTs with Dance Background	2.93±1.20	0.78 (0.46-0.94)
SPTs without Dance Background	2.23±1.41	0.62 (-0.12-0.90)
ATs without Dance Background	2.47±1.55	0.64 (0.14-0.90)
Dance Instructors	2.88±1.22	0.79 (0.47-0.94)

Table 3. Intra-Rater Reliability

	Test 1	Test 2	ICC (95% CI)
Total			
All	9.94±4.46	9.17±4.45	0.86 (0.82-0.89)
PTs with Dance Background	10.69±4.45	9.15±4.16	0.84 (0.76-0.90)
PTs without Dance Background	9.43±3.87	8.73±3.53	0.78 (0.64-0.87)
SPTs with Dance Background	9.98±3.95	9.65±4.32	0.91 (0.84-0.96)
SPTs without Dance Background	8.20±4.25	9.80±5.09	0.89 (0.72-0.96)
ATs with Dance Background	8.00±2.31	6.00±2.54	0.92 (0.67-0.98)
ATs without Dance Background	9.66±4.90	8.30±5.00	0.87 (0.77-0.93)
Dance Instructors	10.17±4.67	9.20±4.71	0.91 (0.82-0.96)
Plié			
All	2.24±1.51	1.98±1.58	0.77 (0.71-0.82)
PTs with Dance Background	2.35±1.65	2.08±1.64	0.76 (0.63-0.85)
PTs without Dance Background	2.32±1.55	2.15±1.39	0.78 (0.64-0.87)
SPTs with Dance Background	2.20±1.16	1.78±1.64	0.76 (0.54-0.87)
SPTs without Dance Background	2.05±1.54	2.45±2.11	0.82 (0.56-0.93)
ATs with Dance Background	1.30±1.06	1.10±1.45	0.80 (0.20-0.95)
ATs without Dance Background	2.28±1.67	1.94±1.38	0.78 (0.62-0.88)
Dance Instructors	1.97±1.25	1.40±1.40	0.83 (0.65-0.92)
Dèveloppé			
All	2.22±1.82	1.99±1.70	0.80 (0.74-0.84)
PTs with Dance Background	2.53±1.81	2.06±1.69	0.79 (0.68-0.87)
PTs without Dance Background	1.85±1.45	1.63±1.50	0.58 (0.29-0.75)
SPTs with Dance Background	2.38±1.71	2.15±1.70	0.91 (0.82-0.95)
SPTs without Dance Background	1.45±1.28	2.20±1.58	0.70 (0.25-0.88)
ATs with Dance Background	1.80±1.03	1.10±1.29	0.86 (0.43-0.97)
ATs without Dance Background	2.06±2.07	1.50±1.58	0.78 (0.62-0.88)
Dance Instructors	2.37±1.92	2.30±1.99	0.94 (0.87-0.97)
Passé relevé balance			
All	2.81±1.41	2.57±1.47	0.76 (0.69-0.81)
PTs with Dance Background	2.86±1.35	2.50±1.24	0.74 (0.59-0.83)
PTs without Dance Background	2.73±1.40	2.33±1.58	0.76 (0.60-0.86)
SPTs with Dance Background	2.60±1.45	2.63±1.46	0.72 (0.46-0.85)
SPTs without Dance Background	2.55±1.19	2.65±1.31	0.67 (0.16-0.87)
ATs with Dance Background	2.80±1.03	2.50±0.85	0.54 (-0.84-0.89)
ATs without Dance Background	2.70±1.64	2.44±1.84	0.81 (0.66-0.89)
Dance Instructors	3.17±1.42	2.70±1.47	0.86 (0.71-0.93)
Jumps			
All	2.68±1.33	2.63±1.37	0.76 (0.69-0.81)
PTs with Dance Background	2.95±1.28	2.50±1.40	0.81 (0.71-0.88)
PTs without Dance Background	2.53±1.26	2.62±1.09	0.64 (0.40-0.78)
SPTs with Dance Background	2.83±1.28	3.10±1.17	0.83 (0.68-0.91)
SPTs without Dance Background	2.15±1.31	2.50±1.50	0.89 (0.73-0.96)
ATs with Dance Background	2.10±1.29	1.20±0.63	0.58 (-0.68-0.90)
ATs without Dance Background	2.62±1.58	2.42±1.64	0.69 (0.46-0.82)
Dance Instructors	2.67±1.32	2.80±1.30	0.81 (0.61-0.91)

Chapter 4: Discussion

The inter-and intra-rater reliability for the total scores among all raters and within the individual profession subgroups ranged from good (ICC of 0.75-0.9) to excellent (ICC of >0.9). This confirmed our hypothesis that the Dance Technique Screening Instrument is reliable among professionals with and without formal dance training. These findings demonstrate that this specific screening tool could be a utilized by a variety of professionals to identify dancers at risk for future injury.

The ICC values for the total score of all-raters inter-rater reliability were slightly higher than the ICC values for intra-rater reliability. The intra-rater reliability was higher among professionals with formal dance training. The inter-rater reliability was similar among those with and without formal dance training. The higher all-rater inter-rater reliability scores and similar inter-rater reliability scores for the subgroups may be explained by participants being required to watch the training videos before the first round of testing, but not before the retest. Bronner et al. and Garrison et al. both performed video-based reliability studies that required the raters to complete training before the first round of scoring, but did not require the raters to re-watch the training prior to the retest.[16,19] Both of these studies observed a higher inter-rater reliability than intra-rater reliability.[16,19] All of the subjects that participated in our study were sent links to review the content in the training videos before the re-test, but it was not mandatory for participants to re-watch these videos to access the second round of surveys. The performance of the individuals without formal dance training may have been more significantly affected by not reviewing the information provided in the training videos. Individuals with formal dance training may have been able to rely on previous dance experience to be consistent in scoring.

Many of the PTs and ATs without formal dance training in our study are responsible for treating dancers. PTs without a dance background had 1.9±3.1 years of experience working with

dancers and ATs without a dance background had 0.7±1.2 years of experience working with dancers. These professionals and their patients who are dancers would benefit from having a dance screening tool that is reliable.

Ballet and modern dance technique require specific biomechanical alteration to movements such as jumping and squatting.[10] When using a screening tool that is not specific to dance, such as the FMS, the scores will only reflect deficiencies in movements that the FMS has determined to be predictive of injury and will ultimately exclude faulty biomechanics that are only seen when analyzing dance specific movements.[10] The Dance Technique Screening Instrument is an alternative to a general functional movement screen as it assesses dancers during dance specific movements.[16] Each of the dance sequences evaluated during the Dance Technique Screening Instrument require the dancer to jump and squat while maintaining proper dance specific technique. Providers evaluating dancers for movements that could put them at increased risk for injury should use a screening tool that evaluates the unique movements required for the performance of technically sound dance techniques. Our findings are significant because they establish that Dance Technique Screening Instrument can be reliably utilized by professionals with and without formal dance training. This reliable dance screening tool provides a universal option for practitioners to identify when a dancer is at risk for injury.

Chapter 5: Limitations

  This research may have been limited by the small sample size that completed both the initial test and re-test procedures in the SPT without dance training, AT with dance training, and dance instructor groups. We saw many participants who were able to complete the first round of testing but did not complete the second round of testing for unknown reasons as these participants failed to respond to reminder emails and follow up contact. Future research will need to be done to investigate if the reliability remains high with a larger sample size in these specific groups to ensure that these results are generalizable to our target population. This study is also limited by its video-based nature. Real-time screening procedures may affect the reliability of the screen because raters do not have the ability to repetitively re-watch movements as they do on video. While performing screening in real time, it would be not be realistic to ask an athlete to perform multiple consecutive trials of a specific movement due to the risk of fatigue affecting performance and time constraints while conducting prompt screening assessments.

Chapter 6: Conclusion

Our study helps to establish the reliability of the Dance Technique Screening Instrument among a variety of professionals with and without formal dance training. This screening tool can be implemented by a variety of providers to identify dancers at increased risk for injury. Identification of at-risk dancers will allow healthcare providers to create corrective interventions to alleviate the large burden that dance-related injuries create on the dance community. Research in the future that includes screening with this tool and injury surveillance may be able to establish threshold scores that predict future injuries and further establish this tool in ballet and modern dance communities.

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Curriculum Vitae

KATHLEEN M. STONE, LAT, ATC

katiestone35@gmail.com

EDUCATION

Doctorate of Physical Therapy
University of Nevada, Las Vegas, Las Vegas, NV • Expected: May 2021
Bachelor of Science, Kinesiology with an emphasis in Athletic Training
San Diego State University, San Diego, CA • Magna Cum Laude • May 2015

LICENSURE

Nevada State Physical Therapy Board, Expected May 2021 (Pending Graduation)
Nevada State Board of Athletic Trainers, License #: 0506538

CERTIFICATIONS

Certified Athletic Trainer (ATC) by The Board of Certification, Inc. (2015), Certification #: 2000021979
American Heart Association BLS Provider (Exp. April 2023)

EMPLOYMENT

Graduate Assistant, Department of Physical Therapy (August 2019-May 2020)
University of Nevada, Las Vegas, Las Vegas, NV
- Assisted with data collection, management and analysis.
- Provided one-on-one tutoring for students in Orthopedic Principles course.
- Assisted with lab review sessions for the orthopedic track classes.

Assistant Athletic Trainer (August 2015-May 2017)
Saint Francis High School, Mountain View, CA
- Provided emergency care for a variety of male and female sports.
- Provided rehabilitative care for athletes with acute and chronic athletic injuries.
- Mentored high school students with an interest in the sports medicine field.
- Developed educational handouts for student-athletes and parents on concussions and ImPACT testing.

CLINICAL TRAINING

Student Physical Therapist
- Champion Physical Therapy and Performance • Waltham, MA (December 2020-March 2021)
- Advanced Health Care of Reno • Reno, NV (September-December 2020)
- Centennial Hills Hospital • Las Vegas, NV (July-September 2020)
- FYZICAL Therapy & Balance Centers, Cheyenne • Las Vegas, NV (June-July 2019)

Student Athletic Trainer
- Rancho Bernardo High School • San Diego, CA (August 2014-June 2015)
- San Diego State University • San Diego, CA • Sport Assignments: Baseball, Football (July 2013-May 2014)

LEADERSHIP

UNLVPT Class of 2021, Vice President (June 2018-Present)
APTA Core Ambassador, Nevada (October 2019-October 2020)

SERVICE

Volunteer- Vegas Vengeance Wheelchair Rugby Tournament (January 2019)
Volunteer- Texas Hold'em Wheelchair Rugby Tournament (November 2019)
Volunteer- Tri-State Physical Therapy Conference (October 2019)
Volunteer-NVAPTA National Advocacy Dinner (July 2019)
Event Organizer- SDSU Athletic Training Program Alumni Reception for the NATA Clinical Symposia (June 2019)
Panel Member- UNLV Pre-Physical Therapy Society- Q&A on DPT Programs and Applications (November 2018)
Volunteer-NVPTA Annual Membership Meeting (October 2018)

RESEARCH

Student Researcher

"Characterization of the spinal reflex circuit function and Achilles tendon micromorphology in individuals with chronic post-stroke hemiparesis" (Fall 2019-Spring 2020)

"Intra and inter-test reliability of the dance technique station of a pre-participation dance screening examination" (In progress)

PRESENTATIONS

Presenter

Multidisciplinary Sports Didactics, University of Nevada, Las Vegas
"Patellofemoral Pain" (October 2019)
"Injuries in Youth Throwing Athletes" (April 2020)

Poster Presentation

Combined Sections Meeting "Asymmetries in Dynamic Valgus Index after Anterior Cruciate Ligament Reconstruction" (February 2021)
California Athletic Trainers' Association Annual Leadership Development Conference and Clinical Symposium
"Inter-rater Reliability of the BESS versus the BTrackS Board for Balance Assessment" (March 2015)

CONTINUING EDUCATION

APTA Combined Sections Meeting- Denver, CO, February 2020
AASPT Team Concept Conference- Las Vegas, NV, December 2019
APTA National Student Conclave- Albuquerque, NM, October 2019
Tri-State Physical Therapy Conference- Las Vegas, NV, October 2019
National Athletic Trainers' Association Clinical Symposia & AT Expo- Las Vegas, NV, June 2019
APTA Combined Sections Meeting-Washington, DC, January 2019

APTA National Student Conclave- Providence, RI, October 2018
UCSF Primary Care Sports Medicine Conference-San Francisco, CA, December 2017
Graston Technique-M1 Basic Training-Los Angeles, CA, December 2016

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Member- National Athletic Trainers' Association (2013-present) Member #:71475
Member- American Physical Therapy Association (2018 - present) Member #:836429
- American Academy of Sports Physical Therapy (2019-Present)
- Academy of Orthopedic Physical Therapy (2021-present)

Braden Waters, SPT
Department of Physical Therapy, University of Nevada, Las Vegas
4505 Maryland Parkway, Las Vegas, Nevada 89154
bradenwaters@yahoo.com

Education

DPT	University of Nevada, Las Vegas – Las Vegas, Nevada	2018 - current	Doctorate of Physical Therapy-class of 2021
BS	University of Nevada, Reno – Reno, Nevada	2015-2018	Community Health Sciences-Kinesiology
AA			Athletic Training
	Santa Barbara City College – Santa Barbara, California	2012-2014	

Licensure

NV State Physical Therapy License Pending Graduation May 2020

Certifications

- American Heart Association, BLS for Healthcare Providers (April 2019 – April 2021)
- CITI Biomedical IRB Course Completion (March 2019)
- HIPPA Training Certified (March 2019)
- Blood-Borne Pathogens Training Certified (March 2019)

Employment/ Clinical Experience

- Saint Mary's Regional Medical Center – Reno, NV – DPT clinical rotation: Inpatient – (September '20 – December '20)
- Renown Rehabilitation – Reno , NV – DPT clinical rotation: Rehabilitation – (January '21 – April '21)
- Carson Valley Medical Center – Minden, NV – DPT Clinical rotation: OP orthopedics – (July '20 – September '20)
- Northern Nevada Medical Center - Reno, NV- DPT Clinical Rotation: OP orthopedics - (July '19 -August '19)
- Active Physical Therapy - Reno, NV- Physical Therapy Technician – (December 2017-August 2018)

- Active Physical Therapy - Reno, NV - Observation/ Volunteer – (May 2017 -December 2017)
- Rosewood Rehabilitation - Reno, NV - Observation/ Volunteer – (January 2017 – May 2017)
- Nevada Physical Therapy - Reno, NV - Observation/ Volunteer - Fall 2015 – Spring 2016)
- SBCC Student Athletic Training – Santa Barbara, CA – Student Trainer -Spring 2013 - Fall 2014)

Current Research Activity

- Inter/Intra-rater Reliability Testing for a Dance Injury Screening Tool for Ballet and Modern Dance (02/2019 to current)
    o Dr. Catherine Turner PT, DPT

Membership in Professional Organizations

- Member of American Physical Therapy Association (2018 to present)
- Member of Nevada Physical Therapy Association (2018 to present)

Service

- UNLVPT Prospective Student Interviews Volunteer
    o 02/01/18 and 02/08/18
- Three Square Food Bank (October 2018)
- Parkinson's Moving Day (September 2019)

Continuing Education Attended (last 3 years)

- **Distinguished Lecture Series in UNLV**
  Distinguished Lecturer, Irene Davis, PhD, PT, FACSM, FAPTA, FASB:
    o November 15, 2018 : Footwear Matters: Lets Think Differently about the Foot
    o November 16, 2018 : Well Aligned, Soft Landings: A Cure for Running Injuries?
- **Brown Back Lecture Series in UNLV**
    o **September 6th, 2018,** — Beren Shah, PT, DPT and Rob Robb, PT, DPT, "Why your DPT is worthless and what you can do to change it!"
    o **October 4th, 2018**— Donovan Lott, PT, PhD - Development of a strength training program in Duchenne Muscular Dystrophy
    o **November 1st, 2018** — 48th Mary McMillan Lecture: "Turning Over the Hourglass" by Richard K. Shields, PT, PhD, FAPTA
    o **November 8, 2018** — Charalambos Charlambous, PhD – Can an acute exercise bout influence the sensorimotor locomotor memories?
    o **November 29, 2018** — 49th Mary McMillan Lecture: "Wisdom and Courage: Doing the Right Thing" by Laurie Hack, PT, DPT, PhD, MBA, FAPTA

- **2017 APTA Combined Sections Meeting – Washington D.C. (01/20/19 to 01/26/19)**