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## The Collegiate Dancer as an Athlete: An Argument for Athletic Strength & Conditioning in Collegiate Dance Programs

Samantha Phillips  
*University of South Carolina*

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THE COLLEGIATE DANCER AS AN ATHLETE: AN ARGUMENT FOR ATHLETIC  
STRENGTH & CONDITIONING IN COLLEGIATE DANCE PROGRAMS

By

Samantha Phillips

Submitted in Partial Fulfillment  
of the Requirements for  
Graduation with Honors from the  
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Approved:



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Jennifer Deckert  
Director of Thesis



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André Megerdichian  
Second Reader

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Steve Lynn, Dean  
For South Carolina Honors College

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## **Thesis Summary**

Most collegiate sports athletes participate in compulsory athletic strength and conditioning; however, such requirements are not prevalent in university dance programs. Designed as arts degree programs, most requirements revolve around technique, history, pedagogy, theoretical understandings of composition, rehearsals, dance anatomy, and in certain cognates, education. The growing incorporation and paradigm shift of dance as a sport, as well as an art, supports the inclusion of collegiate dance programs into similar considerations, regulations, and requirements as competitive collegiate sports teams. As such, this is an argument and recommendation for the inclusion of athletic strength and conditioning in collegiate dance programs.

## **Introduction**

The identification of risk factors for injury occurrence has a foundation in sports research, in which the dance science field is not immune from. The emergence and growth of dance science over the past few decades has led to an overhaul of research pertaining to injury risk prevention through determining risk factors and attempts at establishing pre-assessments to predict injury and performance. The cause is noble and well-intended; however, the outcome has proven less than helpful in practice. Research has shown that the presence of muscular imbalances, restricted range of motion, aerobic and anaerobic capacity, and other prospective measures of injury risk in screenings and assessments are ineffective at predicting injury risk outcomes.<sup>1</sup> Such screenings are only snapshots of any athlete's status and have no significant accuracy in predicting short- or long-term injury occurrence. The presence of such movement discrepancies is not a guarantee of injury, and simply knowing of them is not helpful in improving an athlete's performance or health outcomes.

It is also important to note that studying and assessing such risk factors as prospective observational studies without such intervention is unethical. While we may be unable to predict injury with assessments, it is known that allowing athletes to practice with movement discrepancies does pose risk for injury occurrence even if it is not a definitive prediction of an individual's injury.<sup>2</sup> Despite the lack of effective assessments, evidence does support that the

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<sup>1</sup> Bahr R. Why Screening Tests to Predict Injury Do Not Work—And Probably Never Will: A Critical Review *British Journal of Sports Medicine* 2016; 50:776-780.

<sup>2</sup> Verhagen E, Van Dyk N, Clark N, *et al.* Do Not Throw the Baby Out with the Bathwater; Screening Can Identify Meaningful Risk Factors for Sports Injuries *British Journal of Sports Medicine* 2018; 52:1223-1224.

performance and health outcomes of collegiate dancers could be largely impacted by strength and conditioning interventions.

Most collegiate sports athletes participate in compulsory athletic strength and conditioning; however, such requirements do not seem to be prevalent in university dance programs. Designed as arts degree programs, most requirements and curriculum revolve around technique, history, pedagogy, theoretical understandings of composition, rehearsals, dance anatomy, and in certain cognates, education. The growing incorporation and paradigm shift of dance as a sport, as well as an art, supports the inclusion of collegiate dance programs into similar considerations, regulations, and requirements as competitive collegiate sports teams. These considerations are in the best interest of the success of the programs' development of well-rounded dance athletes, as well as in the best interest of the dancers' future careers, long term physical health outcomes, and current progression as artists and athletes within dance programs.

### **Addressing Dance as a Collegiate Athletic Program**

Collegiate dance programs do not receive recognition as a sport from organizations such as the National Collegiate Athletic Association (NCAA), which regulates and legislates regarding the health, safety, and fairness of collegiate sports, as it does not meet the requirements outlined in the definition of a sport for the purpose of the institution, as listed below.

*"A sport shall:*

- 1. Be defined as an institutional activity, sponsored at the varsity or club level, involving physical exertion for the purpose of competition against teams or individuals within an intercollegiate competition structure.*
- 2. Operate under standardized rules with rating/scoring systems ratified by at least one official regulatory agency and/or governing body."*<sup>3</sup>

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<sup>3</sup>NCAA Emerging Sports for Women Process Guide.

Despite this exclusion from collegiate sports regulating committees, dance has gained momentum in being included in many athletic program requirements for universities already. Many university programs require physicals, health history, and waivers to be submitted for collegiate dancers. Athletic training clinics are also becoming more common among programs in the same fashion.<sup>4,5</sup> There is not much debate among the exercise science or sports medicine community that dance requires comparable athletic levels and results in similar injury rates and medical needs as those seen in many other sports.<sup>6</sup> The importance of strength and conditioning in collegiate sports practices has been incorporated into the fabric of their existence in the present time and numerous studies have shown its benefits of performance improvement and preparedness within dancers as well. The exclusion of collegiate sport strength and conditioning from collegiate dance program requirements is not consistent with the current trajectory and findings of the dance science and sports science community. Program directors and dance program regulatory boards need to rectify this disconnect between strength and conditioning research regarding sport performance requirements, expectations, and current practices within collegiate dance programs.

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<sup>4</sup> George Mason University. *University Catalog*. School of Dance (2021-2022). (<https://catalog.gmu.edu/colleges-schools/visual-performing-arts/dance/#coursestext>).

<sup>5</sup> University of Arizona, “*Student Handbook*” College of Fine Arts: School of Dance. (<https://wpu.cfa.arizona.edu/wp-content/uploads/sites/5/2017/09/22232442/School-of-Dance-Student-Handbook.pdf>).

<sup>6</sup> Miller, L., & Miller III, F. L. (2017). *A Comparative Analysis of the Fitness of Collegiate Dancers as Compared to Collegiate Volleyball and Softball Players*. *Am J Undergrad Res*, 14(1), 11-6.

## **Dance Program Regulation and Requirements**

Though college dance programs are not included in regulatory processes of the National Collegiate Athletic Association, they are regulated by the National Association of Schools of Dance, known as the NASD. The NASD outlines curriculum requirements and approves accreditation as the governing body of dance programs at the collegiate level, as well as the pre-professional level. There are clear regulatory guidelines outlined in their handbook in relation to academic and performing arts requirements, but health, safety, and conditioning are addressed only in passing. In the NASD handbook, requirements for health and safety are outlined in only the small section quoted below:

*“Dance program policies, protocols, and operations must reflect attention to maintenance of health and injury prevention and to the relationships among: the health and safety of dancers; suitable choices of equipment and technology for various specific purposes; appropriate and safe operation of equipment and technology; and other conditions associated with health and safety in practice, rehearsal, and performance facilities. Specific methods of providing information and addressing injury prevention, technology, and facilities are the prerogative and responsibility of the institution.”*

To add to the inexplicit requirement of health and safety, the handbook also requires the burden of education on injury prevention to be placed upon the institution, but guidelines on how to do that or where such information should derive from is not provided. The requirements for the maintenance of fitness and conditioning of dancers are addressed as,

*“For dance majors and dance faculty and staff, general topics include, but are not limited to, basic information regarding the maintenance of musculoskeletal health and injury prevention. They also include instruction on facilities and equipment hygiene, and the use, proper handling, and operation of potentially dangerous materials, equipment, and technology as applicable to specific program offerings or experiences. Beyond the provision of basic general information, and the identification of available resources, decisions regarding topic areas and breadth and depth are made by the institution, and normally are correlated with the nature, content, and requirements of specific areas of specialization or specific courses of study.”*



These burdens, as placed on the institution, are often addressed in conjunction with technique classes, in which such focuses are not of the forefront of the curriculum, and though they are important to reference in the setting, they do not have a defined place within it. This is not to say they should not be addressed in these classes; however, expecting all dance educators to have the expertise to bestow such information in a constructive and evidence-based fashion is irresponsible. Targeted environments with trained professionals would be more effective for both the educators and the students. Just as most sports strength and conditioning coaches would not be asked to teach dance, we should not be asking all dance educators to take on the burden of teaching and prescribing strength and conditioning programming for dancers or answering their questions about it, as not all have the expertise in such areas, nor should they be expected to.

### **Current Strength & Conditioning Methods within Dance Programs**

Many dance programs have already implemented athletic training clinics and/or sports medicine clinics into their practice, such as our program at the University of South Carolina, as well as programs such as the University of Arizona and George Mason University. Despite this inclusion, few have gone as far as incorporating strength and conditioning into their curriculum or requirements, at all, and none have compulsory requirements.

Here at the University of South Carolina, there is mention of such principles and education within technique classes and there are other informal methods of distribution, such as Professor Andre Megerdichian's generalized videos of strength exercises that dancers can do on their own. There are not any curriculum-based classes that focus on teaching dancers proper form,

equipment use, or programming principles, let alone compulsory or voluntary strength and conditioning requirements for the dancers.<sup>7</sup>

At the University of Arizona, there are no strength and conditioning classes provided in the curriculum. Additionally, their program handbook explicitly places the burden of physical conditioning upon student dancers, as follows:

*“Maintaining optimal physical condition is essential to perform at the highest level. Each dancer should maintain a healthy, athletically fit body to meet the rigor of dance as a professional vocation and as a matter of professional preparedness.”*<sup>8</sup>

There is no formal training, programming, or education on proper strength and conditioning methods within the program curriculum or practice that would prepare dancers to be able to fulfill this responsibility.

Within a review of multiple programs, the only one I found that offered a structured course in strength and conditioning was George Mason University. The program has an Introduction to Dance Conditioning course available as an elective, which provides instruction as listed on their website and:

*“Involves intensive rehabilitation and conditioning exercises and realignment training geared for the individual dancer. In-depth understanding of injury prevention and neuromuscular re-education are applied to ballet and modern technique classes.”*<sup>9</sup>

Even though this is a step towards incorporating formal strength and conditioning training into collegiate dance programs, its apparent focus on rehabilitative and “realignment”

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<sup>7</sup> CarolinaDanceScience. Instagram.

<sup>8</sup> University of Arizona, “Student Handbook” College of Fine Arts: School of Dance. (<https://wpu.cfa.arizona.edu/wp-content/uploads/sites/5/2017/09/22232442/School-of-Dance-Student-Handbook.pdf>).

<sup>9</sup> George Mason University. *University Catalog*. School of Dance (2021-2022). (<https://catalog.gmu.edu/colleges-schools/visual-performing-arts/dance/#coursestext>).

training is not indicative of true strength and conditioning as it relates to sports performance and athletic preparation, as presented in this argument. Rehabilitative exercises are focused more on dysfunctional movement patterns and injury recovery. While important, this does not necessarily truly improve and prepare the non-injured or recovered dancer for the athletic demands of dance practice and performance. The use of sport centered anaerobic and aerobic conditioning and progressive overload of resistance training can result in such performance outcome improvements and injury risk mitigation.

The defining important point in this assessment of current program practices is that there is an overarching lack of inclusion of rudimentary or developed athletic strength and conditioning among collegiate dance programs.

### **Strength & Conditioning in Collegiate Level Sports**

Across collegiate athletics programs, a variety of safety, health, and performance measures have been legislated by the NCAA, ranging from sports clearance examination to athletic training clinics and compulsory collegiate sports strength and conditioning programs as scheduled by the coach. The weekly schedule of any collegiate sports team is almost guaranteed to include organized, mandatory, and supervised strength and conditioning administered in a professional, well planned, individualized group capacity. Strength and conditioning coaches responsible for these sessions are informed participants in the medical team of athletes, tasked with programming for athletes to increase athletic performance and physical preparedness for sport, as well as ensuring appropriate programming for those who have recovered or are recovering from injury. They work closely with athletes, athletic trainers, coaches, and medical

professionals to ensure the appropriate programming for each athlete as well as their goals, needs, and limitations for where they are in their career.

According to the National Strength and Conditioning Association, during the pre-season, student athletes typically participate in three to five hours of strength and conditioning during the week. That duration typically drops during the competitive season to two to four hours a week and is adjusted based on practice and performance load. The strength and conditioning coaches are tasked with programming sports-specific strength and conditioning for the athletes and may have communication with and programming for athletes during post-season and off-season periods.<sup>10</sup>

These training sessions do not necessarily take place daily, and the goal is for them to be helpful and reasonable for athletic performance. Coaches are tasked with constant evaluation and input to create optimal programming for each athlete as an individual and for the team as one interrelated entity. When considering incorporating such practices into collegiate dance programs, the values and expectations present in these other settings should be met in a similar manner, with emphasis on the safety, quality, and efficacy of the inclusion of sports-specific strength and conditioning for dancers.

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<sup>10</sup> Kasales, Michael. *“Practical Methods for the Strength and Conditioning Coach to Develop Student-Athlete Leadership-Part I.”* National Strength and Conditioning Association (NSCA). NSCA, June 1, 2017.

## **Evidence for Strength & Conditioning for Dancers**

The foundation of the argument for sports strength and conditioning for collegiate dance programs hinges on evidence of the effectiveness of strength and conditioning protocols for dancers. There have been numerous studies with a focus on assessing if different cross training methods influence dance performance outcomes, and the broad outlook is that strength and conditioning interventions do result in improved performance of dancers.

The implementation of strength and conditioning for dancers as athletes is important because dance training does not always introduce stimulus great enough for adaptation of aerobic capacity improvement or muscular strength and endurance growth to continue to progress training and performance. The solution to these limitations of current dance training is to include evidence-based strength and conditioning programming that has been supported by dance science research. One study, which implemented a twelve-week intervention to assess the effectiveness of an aerobic and strength training protocol on adult modern dancers, found significant improvements in aerobic capacity, muscular strength, and flexibility in the intervention group, as compared to the control group.<sup>11</sup>

In another training intervention study, an eight-week progressive overload resistance training program was utilized. The intervention was focused on muscular strength, power, and body composition in female collegiate dancers and took place with three sessions per week. Outcomes of the intervention group included improved strength and power, resulting in

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<sup>11</sup> Koutedakis, Yiannis, Harmel Hukam, George Metsios, Alan Nevill, Giannis Giakas, Athanasios Jamurtas, and Lynn Myszkewycz. "The Effects of Three Months of Aerobic and Strength Training on Selected Performance-and Fitness-Related Parameters in Modern Dance Students." *The Journal of Strength & Conditioning Research* 21, no. 3 (2007): 808-812.

allowance of improved muscular loading and fatigue resistance, which is correlated with increased performance and injury risk decreases.<sup>12</sup>

In a large systematic review of research assessing strength and plyometric training on functional dance performance, it was found that supplementary training interventions of traditional resistance or plyometric training showed increases in many dance performance measures, including jump height and overall aesthetic ability.<sup>13</sup> The overall outcome from all assessed studies were positive in reference to strength, plyometric, and conditioning interventions.

Given research supports strength and conditioning as a positive factor for performance improvement and injury risk mitigation within dancers as it does for traditional collegiate athletes, the inclusion of its implementation into collegiate dance programs should also parallel its inclusion in traditional collegiate sports settings. With the premise of performance improvements as a result of generalized evidence-based progressive overload and cardio-respiratory training among dancers in random control trials, systematic reviews, and training interventions, the next step is community-based implementation within dance programs, on a small voluntary scale.

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<sup>12</sup> Sanders, David J., Thomas D. Cardaci, Bridget A. McFadden, A. J. Walker, B. N. Bozzini, H. P. Cintineo, and S. M. Arent. "The Effects of an 8-week Resistance Training Intervention on Muscular Strength, Power, and Body Composition in Collegiate Female Dancers." *Comparative Exercise Physiology* 16, no. 4 (2020): 277-284.

<sup>13</sup> Girard, Joe, Kristina Koenig, and Dave Village. "The Effect of Strength and Plyometric Training on Functional Dance Performance in Elite Ballet and Modern Dancers." *Physical Therapy Reviews* 20, no. 4 (2015): 233-240.

## **Implementation**

The ideal implementation of strength and conditioning within collegiate dance programs would be similar to other collegiate sports, with compulsory participation in professional programming; however, realistic implementation would need to start smaller. The evidence of supporting research points toward the efficacy of its implementation but evidence still needs to be established with a degree of specificity among collegiate programs. Next steps would support a research-based elective course for program students, in which evidence-based sports specific strength and conditioning would be implemented among the participants.

With the hope of supporting the eventual inclusion of compulsory training for dance programs that reflects that of other sports programs, the course design would need to be comparable to the requirements of such programs. With this in mind, it would be preferential to set forth specific guidelines, restrictions, and requirements of the course and intervention, as well as its observation. With considerations of the NCAA, as they regulate collegiate sports, similar recommendations should be followed for the safety and benefit of the athlete, in this case being the dancer. Such recommendations would pertain to professional qualifications, safety, compulsivity, time frame restrictions, and exposure control, as outlined below and should take into consideration the supporting NCAA Legislature of Reference as a starting point, since it is a similar program of comparison.<sup>14</sup>

The first supporting NCAA Legislature of Reference section to include would be 17.1.6 *Sports-Safety Certified Staff Member Presence During Countable, Physical Activities*. It is a

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<sup>14</sup> NCAA, *Legislature of Reference*, (<https://web3.ncaa.org/lstdbi/>).

relatively simple requirement that benefits the student athlete and the professionals involved. This provision states that “an institutional staff member with current certification in first aid, cardiopulmonary resuscitation (CPR) and automatic external defibrillator (AED) use must be present any time a student-athlete participates in a physical, countable athletically related activity.” While this is not directly regulatory of the inclusion of strength and conditioning, it is crucial for the safety of participants and prevention of injury and fatalities. Having these facilities in place are crucial to creating a safe environment for the introduction of athletic strength and conditioning into collegiate dance programs.

The second section of importance to this implementation would be *11.1.4 Strength and Conditioning Coach Certification* which states that “a strength and conditioning coach shall be certified and maintain current certification through a nationally accredited strength and conditioning certification program.” As addressed earlier, having a strength and conditioning professional lead the intervention would be crucial, as typical dance teachers are not qualified to coach and program such activities. To get the most effective outcomes and results in the programming, it should be built upon evidence-based practices and sport specific cross training created by a professional in the area of expertise. By requiring the certification of the coach, which is the same requirement for collegiate sports teams, the expectation is that they would practice with those ideals and values in their position.

The final two regulations of the NCAA that would be important to consider and use or adapt for the addition of strength and conditioning into dance programs pertain to the time an athlete spends in activity. The first is *17.1.7.1 Daily and Weekly Hour Limitations -- Playing Season*: “A student-athlete's participation in countable athletically related activities shall be limited to a maximum of four hours per day and twenty hours per week.” Current discussion of exposure and



the concern related to requiring strength and conditioning for dancers is valid, and it is critical to address this concern to ensure the safety and performance of the dancer. While the recommendation is relevant, the NCAA's restriction to twenty hours a week may not be feasible for dancers as athletes, in the traditional sense. Dancers already exceed this time limitation in program related physical activities, such as technique class and rehearsal. The reasoning of having restrictions on athletic time is still relevant, though the recording of technique classes and rehearsals may need to be adjusted for, as dance practice is also an artistic and academic exploration and not just an athletic one. Whether to count technique and rehearsals as partial hours or change the restriction, this consideration of limiting countable athletic hours would be required when implementing a strength and conditioning program for dancers, in order to combat overtraining and ensure optimal athletic and artistic performance.

In conjunction with an awareness and limitations of exposure and athletic hours, proper recording would be needed to monitor those limitations. This recording is an important aspect that allows appropriate adjustment of cross training while accounting for class and rehearsal demands. The NCAA guidelines regarding this requirement are outlined in provision *17.1.7.3.4 Hour-Limitation Record*: "Countable hours must be recorded on a daily basis for each student-athlete regardless of whether the student-athlete is participating in an individual or team sport. Any countable individual or group athletically related activity must count against the time limitation for each student-athlete who participates in the activity but does not count against time limitations for other team members who do not participate in the activity." The regulation individualizes the recording to the athlete and is performed daily. This would require a greater degree of resources; however, such tracking would be necessary for appropriate, effective strength and conditioning programming. By having awareness of and access to load and

exposure data, the coach can adjust training in a way that would, ideally, not affect performance in a negative manner. Along with this tracking, the associated athletic training facility would need to record the injury occurrences within the dancers to ensure safety of the programming. Being as these are a points of concern for dancers and dance educators, this practice could alleviate some of the apprehension with implementation.

While the NCAA regulations are not necessarily the perfect outline for dance program implementation of strength and conditioning, they provide a well-developed starting point, from which to build from. The implementation of a course, as suggested, would be the experimental design needed to determine the usefulness of these guidelines, where more information is needed, and whether the implementation of athletic strength and conditioning for collegiate dance programs would be a successful endeavor to move towards as current, relevant research suggests.

### **Barriers and Limitations**

Though research supports the implementation of Athletic Strength and Conditioning for collegiate dance program, there are some barriers and limitations that present obstacles to its implementation and acceptance. These include scheduling time constraints and facilities, academic curriculum of programs, teacher and student perceptions of training, and lack of already existing programs to model after.

Many universities have strict scheduling requirements that affect the daily schedules of collegiate dancers. Due to the nature of the programs being primarily academic, whereas typical college sports are separate from the athlete's degree program, the dynamic and active implementation of such a program might look different than it would for typical athletes. To

compound on this nuanced factor, the tracking of countable athletic hours in movement classes meant for theory, pedagogy, and thought exploration could be inaccurate. This inaccuracy would limit available strength and conditioning hours if the recommendations established by the NCAA are followed in this environment. It is possible that due to the unique nature of such curriculums, that sports professionals could find a better way to account for countable athletic hours that would be specific to dance training.

Perceptions of strength training vary across the dance community and could present a barrier to participation and acceptance of training implementation. A study assessing perception of strength training among the dance community found that many are still likely to disagree with the benefits of and participation in strength training for dancers. Though perceptions about the physical effects of strength training have generally improved, the negative perceptions still permeate parts of the dance community, particularly instructors.<sup>15</sup> Despite these views on the physical effects of strength training, many studies, including the eight week intervention and the twelve week intervention discussed previously in *Evidence for Strength and Conditioning for Dancers*, have found no significant changes in body composition or anthropometric measurements to support such fears. Another study had results supporting similar sentiments, in which a narrative review of the dance community and dance research community suggested that there is a language and training barrier for instructors and students who may be unwilling to sacrifice artistic progress for scientific recommendations for training even if it would result in

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<sup>15</sup> Farmer, C., & Brouner, J. (2021). *Perceptions of Strength Training in Dance*. Journal of Dance Medicine & Science.

improvements.<sup>16</sup> This pushback could prove to be an obstacle to strength and conditioning implementation; however, the evidence supports its implementation and suggests that these perceptions are misguided.

Another barrier to widespread implementation of collegiate strength and conditioning for dance programs would be the lack of previous collegiate dance program models to base the implementation on. For such programs to be implemented widespread, it is unlikely that they could get support or funding without a model program that has shown success and positive outcomes from such investment. The research on its own is often not enough to change entire programs, but if a successful program already exists, others are likely to follow suit with similar models and attempts at improvements upon the previously existing model. As previously mentioned, the next step would be a small, voluntary intervention within dance programs. My proposed option for this implementation would be as a strength and conditioning course that collected observational and statistical data on injury and performance improvement difference rates within the program as described in the *Implementation* section of this argument. This class would require a qualified strength and conditioning coach, as well as a suitable class size, and appropriate facilities and resources to be carried out appropriately. The implementation of such intervention needs to be tested and refined in a collegiate program-specific setting to draw evidential conclusions about its efficacy, reliability, and rationality. This solution within itself also has some barriers to inclusion, such as staffing, funding, and course approval, which on a

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<sup>16</sup> Krasnow, Donna H. "Sustaining the Dance Artist: Barriers to Communication Between Educators, Artists, and Researchers." Ausdance National, *Dance Rebooted: Initializing the Grid* (2005): 1-10.

university level is a long, tedious, and laborious process which has a chance of not being approved.<sup>17</sup>

## **Conclusion**

Despite these limitation and barriers, exercise and dance science research points to the next step of including of strength and conditioning within collegiate dance programs. The existence of this research and its findings in dance science are wasteful, if not intended to be implemented on the organizational level of the dance community. Given the information presented, the implementation of athletic strength and conditioning into collegiate dance programs is necessary to support the needs of the students and to meet the growing demands of the developing dance environment. The first step to that implementation, the inclusion of an optional class to develop the necessary information needed for success, are outlined here. Collegiate dance programs have the responsibility of training and preparing the dancer for the pre-professional and professional demands of dance performance. In the current trajectory of the art form, that preparation includes athleticism. As such, a focus on implementing strength and conditioning should be at the forefront of the minds of those intent on the improvement and development of collegiate dance programs.

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<sup>17</sup> University of South Carolina. *Distributed Learning Approval Process*. ([https://sc.edu/about/offices\\_and\\_divisions/distributed\\_learning/course\\_development/approval\\_process/index.php](https://sc.edu/about/offices_and_divisions/distributed_learning/course_development/approval_process/index.php))

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