Annals of Case Reports
Hakim H. Ann Case Rep: 10: 102204
www.doi.org/10.29011/2574-7754.102204
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Research Article

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Injury Investigation as a Function of Effective Engagement Time and Psychological Approach to Activity among Circus Student-Artists

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Citation: Hakim H (2025) Injury Investigation as a Function of Effective Engagement Time and Psychological Approach to Activity among Circus Student-Artists. Ann Case Report. 10: 2204. DOI:10.29011/2574-7754.102204

Received: 26 February 2025, **Accepted:** 01 March 2025, **Published:** 04 March 2025

Abstract

Objective: The purpose of our study was to investigate the injuries among student-artists according to their psychological approaches to the circassian physical activities.

Methods: Thirty-one healthy student-artists participated to this study. A prospective report of injury was established. During the specialties sessions the effective engagement time (EET) on the apparatus and the break periods were quantified. To establish the psychological approach that student artists have towards the artistic physical performances we asked them the following question: "Do you consider yourself as a sports person or not?".

Results: The student-artists considered themselves as not-sporty had the lowest EET ($p = 0.029$). 9 student-artists out of 10 in group with low EET (15%) did not consider themselves sporty at all. In this group we recorded 19 injuries. In group with a medium EET (55%), we noted that it was split into 6 student-artists who considered themselves as sporty and 6 as not-sporty. 20 injuries were recorded among these 12 student artists. Within this same group among the 6 not-sporty ones were all those injured sharing altogether 14 injuries.

Conclusion: We found that those who did not consider themselves as sporty had the lowest effective engagement time and highest injury rate.

Keywords: Effective Engagement Time; Psychological Approaches; Circus Student-Artists; Injury.

Introduction

We are used to describing the artist's body as a tool, an instrument that is itself alive and unique. Barberet (2004) [1] went further by saying that artists do not have bodies, but they are bodies. Postures and figures are the language elements specific to the circus arts [2]. Indeed, the circus artists expresses themselves through their bodies, and even through their whole body. They are in their bodies and they animate them. It is the whole being of the circus artist who is engaged in the art, practice, creation, career and professional life. It is essential for the artist to know the morphology, physiology, psychology, qualities and limits to maintain and protect themselves. They must know how to listen and to analyse themselves.

The artist's body is excessively stressed and subjected to multiple constraints: explosive exercises, prolonged postures, movements in extreme positions, torsion, etc. We can therefore consider sessions of circus specialties as sessions of physical activities of a very high intensity requiring good preparation and a very good dosage of the durations of their different parts and phases. In the practice of any physical activity, it is necessary to set objectives and prioritize them to be guided in the progression. These objectives can be classified into three categories: short-term objectives which correspond to those fixed in the sessions forming the program of the week and renewed weekly; the medium-term objectives which correspond to those to be achieved during the year in line with the goals to be achieved by the coach / teacher according to the periods of competition or presentations and finally, the last category includes long-term objectives where the issues of the whole career, which are especially important for an artist's life, are mainly made up of daily physical activity, whether through training or performances. Any activity is generally built on background work at the beginning of gestural learning or on the construction of some routine to pass to the technique thereafter.

Training loads can also be described in terms of training intensity. The intensity of routines can be expressed and evaluated by determining the number of elements performed per minute [3].

During the learning sessions of circus activities, Goudard et al. (1992 a) [4] found that the workload can be compared to the training load by observing the duration and intensity of the activity but also the quality of the performance. The calculation of the workload according to them depends on the specialty as well as the activity time (the effective engagement time) and the number of people present during the same time slot.

The artist's work to develop themselves mental, psychological, musculoskeletal, cardiorespiratory qualities, themselves gestural coordination and themselves balance. Multiple circumstances can, however, alter these qualities and oppose the effects of training. The increase in intensity, the change in type of effort or the duration of the effort, promote the appearance of injuries. The majority of circus arts disciplines are a source of musculoskeletal problems, particularly during periods of training or search for new figures [5]. In learning circus arts activities, the workload of the artist (i.e. its effective engagement time VS recovery time during the session) can be objectified and calculated. This tracks the artists' progress which can be useful for the artists and their educators. By increasing the workload, the artist progresses. But by increasing physical and psychological constraints, the artists put themselves in danger and risk to injure themselves. The risk is lower if the basic qualities are good, if infections are avoided, if the psyche is enterprising [5].

In their book "Medicine du cirque, vingt siècles après Galien" (Circus medicine, twenty centuries after Galen), which is the result of several years of research and medical follow-up with student artists at the CNAC, Barrault and Goudard (2004) [6] state that learning circus activities requires a quantity of workload beyond which inflammatory pathologies of the musculoskeletal and cardiorespiratory systems appear in practitioners. These authors found that a variation in effective engagement time of between 10 and 15% of the work time on a weekly program of 20 to 30 hours negatively impacts the musculoskeletal, physiological, and mental adaptations of the artists.

After the exercise, the recovery, which is part of the workload, allows energy replenishment rebalancing the endocrine system essential for muscles, tissue growth, and plasticity [7]. Rest also allows to preserve and consolidate the cardiorespiratory system. In addition, rest promotes brain relaxation during which feedback on the new knowledge of the day passes, thus stimulating the assimilation of technical gestures. The duration of the rest interval used during resistance training is considered a variable of primary importance. The amount of rest between sets has been shown to affect metabolism, cardiovascular function, and performance in subsequent sets of exercises [8,9]. Although exercise is a critical stress that results in a beneficial cardiovascular adaptation associated to the routine physical activity, it is during the recovery period that these adaptations take place. So, it could be argued that the recovery period is just as important as stimulating exercise [10].

Undoubtedly, the specialized training of artists must necessarily be based on an underlying base of innate talents but the favourable physical qualities and the predispositions are not sufficient in themselves, knowing that the spectacle's artists must follow a particularly rigorous and long training. Physical expectations of performance enable for the performing artists to be promptly removed from the artists' brotherhood and returned to the ranks of athletes [11]. Allen took the similarity even further, comparing the victory and qualification of the athletes to unqualified applause and the audition for the performing artists. Circus artists share many requirements and characteristics with athletes, but also the need to combine art with performance as well as the particular obligation to entertain an audience. This unique combination offers significant relevance for academic research [12].

The analogies between performing artists and athletes cannot be extended indefinitely. Artists have critical thinking and for them emotional expression in performance is paramount [13]. The performing arts are more prone to emotionality. They are influenced by the different types of personality traits that performing artists can have. Performers tend to be introverted, emotional instable, and cautious [14]. Hamilton et al. (1989) [15] also demonstrated that the personality of artists had an impact on the prevalence of injuries (i.e. fatigue fractures or overtraining). Artists tend to

seek an aesthetic ideal despite performance and risk taking. One of the influencing factors that can contribute to the adoption and maintenance of exercise is the aspect of physical self-perception, the athletic identity of an individual (i.e. the perception of oneself as a person who participates to physical sports activities, artistic physical activities, or as a person who does not) [16,17]. That is, self-perception and active efforts to verify this self-perception can help explain the successful maintenance of regular exercise over time, or the failure to establish an exercise program or artistic physical activity [17]. In increasingly specific fields, such as self-conception specific to exercise, sport and artistic physical activity, it is possible to describe several identities defined by specific attributes (for example, sportsmen) or social roles (eg runner, dancer, acrobat, athlete, artist, etc.) [18-20].

In the identification of the self in relation to physical activities, Anderson (1996, 2004) [16,17] correlated five dimensions. In the first one the self-evaluates information about its physical appearance. People think they look physically fit. In the second dimension, competence is mutually and reciprocally linked to self-esteem, the self-evaluates its competence as athletic. People therefore, sees themselves as being able to perform well in physical activities. The third dimension reflects Stryker's concepts of identity commitment and salience [19], the self-assesses its level of engagement in exercise, sport, and physical activity and rates the importance it attributes to this level. A fourth dimension where the self-evaluates its active efforts to be confirmed or not as athletic through its environmental and social choices. In the fifth-dimension people's development of self-definitions from social interactions and social support can be perceived as high or low, validating or confirming the athletic self in ways that can be very positive or very negative.

Providing an emotionally safe environment is paramount to supporting the creative growth and performance of performers [21]. In this regard, researchers have found that emotional regulation is integral to the success of performers and can reduce the frequency of accidents and near-misses in the contemporary circus arts. Researchers who study the parameters of physical skills in the performing arts are not particularly interested in personality factors, and those who are interested in the personality components of performers are not interested in their physical prowess. In all the existing studies investigating injuries among circassians, none have looked at the relationship between workload, psychological approach to circus activity, and the occurrence of injuries during specialties sessions among student artists.

Problematic

In this study, the objective was to investigate the injuries among student-artists of the National Center for Circus Arts of Châlons-en-Champagne according to their effective engagement times and their rest periods during the specialties sessions, the evolution of their contractile force during these sessions, and their psychological approaches to their predilection activities. This investigation will broaden our knowledge about strength, conditioning, physical condition, and the psychological state of student circus artists. This will allow us to design the most appropriate performance optimization and injury prevention programs to preserve the health of artists. We then put forward the following hypothesis: 1) The lower the effective engagement time during the specialty session, the higher the number of injuries, 2) The contractile force is less important at the end of the specialty sessions, and 3) The state of mind determining the approach to artistic physical activity is related to the injury rate. Our objectives were therefore 1) To establish the injury report, 2) To quantify the effective engagement time and rest periods during the specialties sessions and explore their relationships with injuries, 3) To study the contractile force evolution during the specialties sessions, and 4) To determine if the psychological approach to artistic physical activities is related to the injury rate.

Methods

Subject

Thirty-one healthy adults (14 women and 17 men,22.5 ± 2 years, 170 ± 6.4 cm, 64.5 ± 7.5 kg), registered in the National Center for Circus Arts of Châlons-en-Champagne, participated voluntarily in this study. These student-artists had a seniority of Circassian activities practice ranging from 3 to 4 years and they had a fairly good level in their discipline's practices. They were divided into two groups: 15 aerials (dangling trapeze, stated trapeze, outfielders, Chinese mast, aerial fabrics, aerial webbing, smooth rope, and flying rope) and 16 non-aerials (banquine, bascule, carried acrobatic, cyr wheel, acrobatics, bicycle acrobatics, and acrobatic juggling). Each participant was considered as a specialist in only one of these various aforementioned circus specialties, which he had chosen to practice for at least two years and a half. The subjects' informed consent was obtained in conformity with the declaration of Helsinki for the experimentation on humans. The University of Reims Champagne-Ardenne's ethics committee approved the study.

Protocol

Injury report: during an individualized interview, each student-artist of the two groups gave a retrospective feed-back on the injuries they had suffered throughout 2016. This was done by specifying the month of the injury, its anatomical location, the activity and the time of the practice that caused it, the length of the rest period due to the injury, as well as the duration of the persistence of the pain. An injury is defined as an event inducing a visit to the doctor and may or may not require a rest. This information was verified and confirmed by the injury history file recorded in the National

Center for Circus Arts of Châlons-en-Champagne's database. This injury assessment was similar to that on which we already based ourselves in our previous study on the same population during the same period [22].

Observations of the specialties sessions (lasted from an hour to an hour and half, the warm-up being carried out upstream was not included) were made. During these sessions, the effective engagement time (EET) on the apparatus (moments during which the participant is in bodily engagement) as well as the rest and the break periods were recorded and quantified using a stopwatch for every student-artist. At the end of each session we asked the referent teacher and the student-artists if this session was typical of what could happen normally and frequently in the majority of the sessions and if it was representative enough to be chosen as a control session.

Two measurements of the Hand-Grip force (HGF) (right and left for each time) were carried out by the TAKEI GRIP-D Digital Hand Grip Dynamometer: the first was carried out before the start of the specialties sessions, (i.e. just after the specific warm-up) and the second was carried out when the session stopped.

Regarding the psychological aspect and the approach that student artists have towards their activities and the artistic physical performances, they performed all day long, six days a week, following the method of self-definition in the physical activity domain of Kendzierski et al., (1998), [which [17] adopted to refine the validation of her Scale of Athletic Identity and Its Relation to Exercise Behaviour, initially developed in her 1996 study [16]], we asked them the following question: « Do you consider yourself as a sports person or not? » Leaving them the opportunity to respond « Yes I consider myself totally sporty », « No, I do not consider myself sporty », and they developed how they see themselves, or « I consider myself half-sporty and half-artist ».

Statistics

All data are presented as mean ± standard deviation and/or in percentage. The assumption of normality and sphericity of the data was verified by the Shapiro-Wilk test. All data followed a normal distribution. To study the difference in contractile force between the group with low EET (EET < 20%, group 1), the group with medium EET (EET between 20% and 55%, group 2) and that with high EET (EET > 55%, group 3) a one-way ANOVA was used. The paired T-test was used to treat the evolution of contractile force before and after the specialties sessions and between groups of student-artists classified according to their answers to the question « sporty » or « not-sporty » and within the three groups created according to the EET. PivotTables were used to classify the EET, the number of injuries, and the answer to the question « sporty » or « not-sporty ». The CHISQUARE was used to study the dependence relationships between these variables two by two. To find out who are the student-artists the most affected by injuries among those who answered the question about being sporty, just artists (not-sporty) or half-sporty half artists the Wald – Wolfowitz Runs Test was used since the Shapiro-Wilk Test demonstrated that these data did not follow normality.

Results

For practitioners of the Chinese mast, aerial webbing, smooth rope and aerial fabric (group 1), the rest time exceeded 45 minutes for sessions of one hour and a half and the effective engagement time, spent on the apparatus, did not exceed 15% of the total time of the session. Every 4 to 5 minutes of activity were followed by 10 to 12 minutes of rest and often were associated with stretching. The acrobatics, the acrobatic juggling, carried acrobatic, the Korean cradle and the banquine- bascule (group 2) had, on average, an effective engagement time almost equal to their recovery times associated with the instruction's times of the teacher (45 to 50 minutes of EET for 40 to 45 minutes of rest, on average, for a one hour and a half session). For practitioners of disciplines such as dangling trapeze, stated trapeze, flying rope and Cyr wheel (group 3), the fact that the apparatus was located at a very high height from the ground (except for the Cyr Wheel) obliged the specialists of these disciplines to recover on the apparatus and to quickly resume the execution of their figures, hence their overtaking 65% of the average EET for the entire session which lasted one hour for these activities. The only student-artists for whom we noted a time of engagement on their tackles of up to 80% (sessions of one hour and a half) were the tightrope walker and the acrobat on cycle. The latter two were not considered as a group and were not part of the link between the EET and the psychological approach to the circus physical activity.

For the question « Do you consider yourself as a sports person or not? », 18 student-artists answered « No I do not consider myself sporty » and replied « I consider myself just as an artist ». Among these latter, 15 were injured and we recorded 35 injuries in them. 9 student-artists answered to the question « I consider myself purely sporty ». Among them 6 were injured and 9 injuries were retained in them. The last four student-artists answered to the question with « I consider myself as half-sporty and half-artist », 3 of them were injured and we recorded 6 injuries among them.

The CHISQUARE showed that the variable « being injured » and the variable « answer to the question do you consider yourself as a sports person or not » are two independent variables ($p = 0.61 > 0.05$). However, based on the trend curve of the results of the Wald – Wolfowitz Runs Test (not-sporty: 1.94 ± 1.7, sporty: 1 ± 1.1; $p = 0.07$) we could see that those who considered themselves not-sporty and just artists were more injured than those who considered themselves purely sporty.

In group 1, gathering those who had the low effective engagement

time during the specialty sessions (15% of the entire session), 9 student-artists out of 10 among them did not consider themselves at all as sporty but only as an artist. Only one considered himself to be half-sporty and half-artist and no one considered himself as sporty. In this group we recorded 19 injuries.

In group 2, gathering those who had a medium EET almost equal to the recovery times (55%, of the total duration of the session) we noted that it was split into 6 student-artists who considered themselves as sporty and 6 not-sporty who considered themselves just as artists. 20 injuries were recorded among these 12 student-artists. Within this same group among the 6 sporty ones, 3 were injured sharing 6 injuries, however, the 6 not-sporty ones were all injured sharing altogether 14 injuries.

In group 3, gathering those who had a high EET (65% of the entire session) and gathering 3 student-artists who considered themselves as half-sporty half-artists, 2 who considered themselves as sporty, and 2 who considered themselves as artist. 5 of them were injured, sharing 7 injuries.

The CHISQUARE allowed us to detect a relationship of dependence between the effective engagement time and being sporty, artist, and half and half ($p = 0.029$). Those who considered themselves as not-sporty had the lowest EET. The same statistical test showed that the EET and the number of injuries recorded per group were two independent variables ($p = 0.94 > 0.05$).

The Hand-Grip force at the beginning and at the end of the specialties sessions presented significant differences between student-artists who had a low EET and those who had a medium one in either way (HGF group 1 at the beginning of session: 39.5 ± 10.5 kgf; HGF group 2 at the beginning of session: 51.6 ± 12.95 kgf; $p = 0.05$; HGF group 1 at the end of session: 38.17 ± 10.35 kgf; HGF group 2 at the end of session: 53.11 ± 12.3 kgf; $p = 0.03$). We did not observe any significant difference between the HGF of group 1 and that of groups 3 ($p > 0.05$) or between group 2 and group 3 ($p > 0.05$). The HGF also did not show any significant differences between sporty and not-sporty at the beginning and end of the specialties sessions (not-sporty HGF at the beginning of session: 44.5 ± 8.6 kgf; sporty HGF at the beginning of session: 45.76 ± 14.15 kgf; $p > 0.05$; not-sporty HGF at the end of session: 45.16 ± 11.05 kgf; sporty HGF at the end of session: 45.36 ± 14.46 kgf; $p > 0.05$). Measurements of the Hand-Grip force average of the two hands showed an increase in strength in more than half of the student-artists (all disciplines and groups combined) between before the specialties sessions just after the warm-up and at the end of the sessions.

Discussion

The aim of this study was to seek a prospective relationship between the injuries suffered by student-artists of the National Center for Circus Arts in Châlons-en-Champagne, their effective engagement times during the specialty's sessions, and their psychological approach to circus activities. Different factors are incriminated in the occurrence of injuries in the circus activities. The most frequent are physiological, psychological, technical, material factors, and factors due to an insufficient and / or inappropriate preparation of the body for action [22]. By investigating and acting on some of these factors we can prevent injuries, reduce their occurrence and minimize their severity. In this investigation we focused on two of the physiological factors (i.e. effectives engagement times and contractile force) and one of the psychological factors (i.e. the psychological approach to activity).

Practitioners of the Chinese mast, aerial webbing, smooth rope and aerial fabric (group 1), during their specialty's sessions, have very little effective engagement time on the apparatus compared to the recovery periods which last a long time and which are more similar to periods of post-exercise return to calm. These rest periods, for group 1, are often performed passively in the standing position and mainly associated with passive static and long durations stretching just for the upper and lower limbs. Firstly, in our results we found that almost all of the student-artists (90%) in this group did not consider themselves to be at all sporty but just artists with regard to the specificity of their physical activities. Secondly, they have a significantly lower contractile force than group 2. With regard to the group with medium EET (group 2), those among them who did not consider themselves as sporty were all injured and had almost two and a half times the number of injuries compared to those who considered themselves as sporty, of whom only half were injured. Group 2 is the group with the largest number of student-artists who consider themselves as sporty, and has the lowest injury rate and the highest contractile force.

The increase in contractile force in more than half of student artists at the end of specialties sessions can be explained by the fact that passive, static and long-term stretching, before an explosive performance, in this case in our study during periods of passive recovery exceeding 5 minutes, act on muscular contractility by reducing isolated strength and power [23]. The passive, static and long-term stretching that they practiced during their recoveries induced muscle cooling and can constitute a hindrance to blood circulation [24]. Halliwill, et al. (1996) [25] found that the total peripheral resistance and the vascular resistance in the hand and calf during the measurement of maximum force changed in parallel, demonstrating that what occurs in the hand and in the lower leg actually reflects what happens systemically in the majority of muscles during exercise. Halliwill et al. (1996) [25] concluded that the regional neuronal and vascular changes, underlying a vasodilation after exercise, were likely to have a functional significance in sympathetic vascular regulation only at the level of skeletal muscles, inducing in them important functional alterations

on systemic hemodynamics. Skeletal muscle can receive up to 88% of systemic blood flow during exercise. Changes in blood flow in resting skeletal muscle can deeply affect systemic blood pressure which, in turn, can induce tissue damage that can cause injury in the absence of preparation and modulation of the exercise [26,27]. This deficit in contractile force begins to be recovered after 10 to 15 minutes of practiced activity [28] depending on the muscular characteristics of each student-artist. Consequently, we can see through these results that more than half of the student-artists spend their specialty sessions making up for a deficit in strength dissipated by the mismanagement of their recovery time and the practices associated with it.

The variables effective engagement time, psychological approach to artistic physical activity, and the evolution of the contractile force and its variations between groups, studied separately and independently, do not seem to have a relevant relationship with the number of injuries suffered by student-artists and their causation. However, by studying the problem differently and by associating these three variables together, in particular by considering the statistically significant dependency relationship between the first two variables, we find that those who did not consider themselves as sporty have the lowest effective engagement time, lowest contractile force and highest injury rate. From these facts we will discuss these variables individually and combined in a global approach. To do so, we looked first at the variable regarding the sport identity of student-artists, which seems to be the determining factor in the effective engagement time and the occurrence of injuries during the specialty's sessions.

As previously mentioned in the introduction, in the field of self-conception specific to exercise, sport and artistic physical activity, it is possible to describe several identities defined by specific attributes (e.g. sports) or social roles (e.g. artist) [14]. This sport identity has five correlated dimensions [16,17].

Student-artists who see themselves as sporty sign on the second and third dimensions. Firstly, they recognize that competence is "mutually and reciprocally linked to self-esteem" in such a way that it is integrally linked to their attributes and the self is assessed as sportingly competent [29]. This is confirmed by their response "I consider myself 100% sporty" to our question "Do you consider yourself a sports person or not?". People with high skill levels believe that they can participate and perform well in sports and physical activities. It has been shown that people in this dimension are less prone to injury during training sessions and during their careers [30]. Secondly (the third dimension), their self-assessment and their visibility of identity assess their levels of commitment and give importance to exercise, sports and physical activities. This demonstration of the importance of personal commitment in physical activity reflects the pre-eminence of the sporting-self in the identity hierarchy allowing this category of individuals to invest more than others in physical activity as sporty people seeking to have the best physical condition [19]. This explains, in our study, the preponderance of the effective engagement time among sporty student-artists compared to not-sporty ones and also their superiority in contractile force which provides information on the total contractile force of the body and therefore on their better physical condition [25].

The psychological approach to the activity of student-artists who considered themselves not-sporty is determined by the first, fourth and fifth dimensions of identity correlated by Anderson (1996) [16]. In the first dimension, the person assesses information about their physical appearance so that appearance provides signs and emblems to tell others who they are [31]. The appearance also provides information to oneself. People classified under this dimension consider themselves to be in a good physical shape. What matters to these student-artists is their body aesthetics. They argued their answers to the question « Do you consider yourself as a sports person or not? » by « No, I am not at all sporty, I am just an artist and I practice artistic expression ». In the fourth dimension, the individual is introverted, permanently in the self-assessment and in the search for environmental and social controls allowing the ease and / or the guarantee of the activity [31]. This dimension of identity makes student-artists less physically involved in artistic physical activity and more distracted. This is confirmed by the fact that they have a lower contractile force than those who consider themselves as sporty, consequently having a lower physical condition, since the Hand-Grip force is representative of the whole of the general contractile force [25] In the fifth dimension, based on the ideas taught by Cooley (1902) [32] and Mead (1934) [33] claiming that people develop self-definitions from social interactions, the self-assessment reflects the level of support it receives from others by as an artist or as a performer of sports. This support received can be high or low, validating or confirming the sporting-self in a potentially very positive or very negative way. In our study, not-sporty student-artists expressed it in a very negative way with their responses « No, I am not at all sporty ». Thus, these dimensions of identity allow us to note that the student-artist's psychological approach to the circassian physical activity influences and determines the effective engagement time in the specialties sessions.

Aside from their low EET, not-sporty student-artists have a very long and inappropriate recovery time. Even if they aimed to have a full recovery after each figure, a period of 3 to 5 minutes would have been more than enough [9]. However, rest periods exceeding 10 minutes are likely to induce an almost complete return to calm each time leading to muscle cooling which subsequently requires heating and cardiorespiratory reactivation. A cold muscle is less efficient and prone to injury and trauma [34] specially when it is

used in explosive performances as performed in circus activities. Blood pressure is arguably the most regulated cardiovascular variable, but there is a sustained reduction in blood pressure after moderate-intensity whole-body exercise. This hemodynamic change was referred to as post-exercise hypotension [35,36] and has been observed after aerobic and resistance exercises. Situations such as passive recovery in a vertical position combined with passive, static and long-term stretching, frequently observed in group 1, tend to promote the loss of muscle pump in front of the gravitational accumulation of blood in the dependent limbs thus reducing venous return, central venous pressure, and resulting in severe hypotension and syncope [10,37]. Syncope can be very mild and not cause loss of consciousness but loss of attention or dizziness which in turn will be risk factors for injury during exercise or the routine to be performed after this recovery period.

Conclusion

Adequate and well-proportioned effective engagement time combined with a good management of recovery periods to optimize specialties sessions have a direct impact on the physical condition of circassian student-artists. These last factors associated with a psychological consideration of the workload as a physical activity and not as a simple artistic bodily expression can have a direct preventive impact on the health of student artists, especially on the decrease in the occurrence of injuries or even on their severity. Properly managing specialty or show preparation sessions, as well as having a good physical condition associated with the right psychological approach to the artistic physical activity, could be an important factor and an effective step in reducing the risk of injury in the circassian activities.

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declarations of interest: None.

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