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# The Level of Awareness and Practice of Supplementary Training Among Non-Professional Ballet Dancers

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## Abstract

The intensity of physical activity in ballet class is too low to stimulate physical health enhancement and fulfill the physical demands of ballet. Supplementary training (ST) can be introduced to enhance the health status and dance performances of the ballet dancers. To date, what remains unclear is whether non-professional ballet dancers (NPBD) are aware of the importance of ST and whether they are practicing it. This study aims to determine the level of awareness regarding ST and to investigate the practice of ST among NPBD. A cross-sectional design was adopted in this study to identify the level of awareness and practice of ST among NPBD. An online self-administered Google link was sent to potential subjects. A total of 371 responses were obtained, and 236 passed the inclusion and exclusion criteria. Data collected were entered and coded using SPSS version 26.0 software for analysis. The level of awareness of respondents was 73%, which indicates a high level of awareness of ST. There were 119 (50.4%) NPBD who had practiced ST, and 116 (49.6%) did not practice ST. Only 40 (33.6%) of NPBD were currently practicing ST. The level of awareness of ST is high, while the true practice of ST among NPBD is not frequent. NPBD should be encouraged to actively participate in ST to improve their health status, dance performances, and to prevent injury.

## Keywords

Awareness, Practice, Supplementary training, Non-professional ballet dance

## Introduction

Ballet dance represents a unique intersection of art and athletics, necessitating that dancers maintain high levels of physical fitness to meet its demanding requirements (Mistiaen et al., 2012;

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Holland, 2017). Physical fitness within the context of dance can be divided into several components, including aerobic capacity, neuromuscular coordination, strength, power, muscular endurance, and body composition (Kozai, 2012). However, traditional ballet training, rehearsals, and performances do not typically provide sufficient stimulus to significantly improve aerobic fitness (Twichett et al., 2009). While technique-focused training addresses the artistic needs of ballet, it often does not challenge other aspects of physical fitness enough to promote substantial improvements (Kozai, 2012). Moreover, in striving to achieve the aesthetic ideal of thinness prevalent in ballet, dancers may develop eating disorders (Holland, 2017; Zulaikha et al., 2018). Since technical training alone may not result in adequate energy expenditure to maintain these aesthetic standards, caloric restriction is sometimes adopted, increasing the risk of injury (Twichett et al., 2009).

One effective and cost-efficient strategy to reduce injury rates and enhance performance is the implementation of supplementary training (ST) (Holland, 2017; Todd et al., 2017). Supplementary training can include activities such as Pilates, high-intensity interval training, and core strengthening exercises (Amorim et al., 2011; Russell, 2013). ST has been shown to enhance overall fitness, delay fatigue onset, and subsequently decrease incidence of injuries (Mistiaen et al., 2012; Smol & Fredyk, 2012; Holland, 2017). Additionally, appropriate technique and duration of ST can help meet caloric requirements, enabling dancers to fulfill aesthetic expectations without compromising nutritional intake (Holland, 2017).

The prevalence of dance-related injuries among nonprofessional ballet dancers (NPBD) has been reported at approximately 77.2% (Costa et al., 2016). These injuries are often attributed to inadequate training, resulting in poor technique and insufficient capacity to manage the physical demands of choreography (Russell, 2013; Holland, 2017). Most prior research has focused on the impact of ST on performance enhancement, injury reduction and prevention, and improvement of physical fitness among ballet dancers (Todd et al., 2017; Ahearn et al., 2018; Kalaycioglu et al., 2018). However, to date, there appears to be a lack of studies examining awareness and practice of ST among NPBDs (Holland, 2017). Increasing awareness of ST is critical for promoting health, minimizing injury risk, and improving dance outcomes in this population (Smol & Fredyk, 2012; Rodrigues-Krause et al., 2015; Holland, 2017). Accordingly, the present study aims to assess the level of awareness regarding ST and investigate its practice among nonprofessional ballet dancers.

## Methodology

This study employed a cross-sectional design. Of the 371 responses collected, 236 met the inclusion criteria and were analyzed. Inclusion criteria required participants to be ballet dancers aged 16 to 35 years, practicing ballet as a hobby, attending at least one hour but no more than five hours of ballet classes per week, and possessing at least one year of experience. Professional ballet dancers and individuals involved in other dance genres were excluded. Data were gathered using a validated, self-administered questionnaire developed via Google Forms and distributed to

potential participants. The survey included questions on demographics, screening items to verify eligibility, and queries related to the level of awareness and practice of ST. Awareness of ST was assessed with a nine-item, five-point Likert scale, yielding a maximum possible score of 45. Informed consent was obtained from all participants, and ethical approval was granted by the Research and Ethics Committee of INTI International University (reference no: INTI-IU/FHLSRC/BPHTI/7NY12020/014). Data analysis was conducted using SPSS version 26.0, and descriptive statistics were presented as frequencies and percentages. For awareness assessment, positive statements were scored as 1 = Strongly disagree through 5 = Strongly agree, with negative statements coded in reverse. Average percentages were calculated based on the mean scores across the nine items, categorizing awareness as low (<39%), moderate (40–69%), or high (>70%) according to Zaid et al. (2017).

## Results and Discussion

Table 1 represents the demographic characteristics of non-professional ballet dancers. The majority of the respondents were female (96.6%) compared to males (3.4%). Among the 236 respondents, 55.5% were aged between 21 and 25 years old, 38.1% participated in ballet dance 3 days a week and 31.8% of the respondents had 11-15 years of experience in ballet dance.

Table 1. Demographic characteristic of respondents

| Characteristics | Frequency (%) |
|---|---|
| Gender | |
| Male | 8(3.4) |
| Female | 228(96.6) |
| Age (years) | |
| 16-20 | 56(23.7) |
| 21-25 | 131(55.5) |
| 26-30 | 44(18.8) |
| 31-35 | 5(2.1) |
| Total duration of dance class per week (hours) 1 | |
| 1 | 16(6.8) |
| 2 | 60(25.4) |
| 3 | 90(38.1) |
| 4 | 41(17.4) |
| 5 | 29(12.3) |
| Ballet dance experience (years) | |
| 1-5 | 40(16.9) |
| 6-10 | 56(23.7) |
| 11-15 | 75(31.8) |
| 16-20 | 55(23.3) |
| 21-25 | 9(3.8) |
| 26-30 | 1(0.4) |

Table 2 describes the level of awareness of supplementary training among non-professional ballet dancers. The mean score was 32.85±4.68 (Max score = 45). Mean score were converted into mean percentage which is around 73.00%. The level of awareness of respondents were 73%, which indicates a high level of awareness of ST. Regarding practice of ST among respondents, 119 (50.4%) had practiced ST and 116 (49.6%) did not practice ST. It was noted that most of them 43(36.1%) practiced ST in past week, 40(33.6%) were practicing ST currently, 26 (21.8%) practiced months before and 10(8.4%) practiced years before.

Table 2. Level of awareness of supplementary training

| | Statements | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean ± SD |
|---|---|---|---|---|---|---|---|
| | | Frequency (%) | Frequency (%) | Frequency (%) | Frequency (%) | Frequency (%) | |
| 1 | Supplementary training is not important to a nonprofessional ballet dancer | 39(16.5) | 119(50.4) | 64(27.1) | 14(5.9) | 0 | 3.78± 0.79 |
| 2 | Ballet class alone is sufficient to maintain physical fitness | 50(21.2) | 94(39.8) | 52(22.0) | 35(14.8) | 5(2.1) | 3.63± 1.04 |
| 3 | Strength training (with resistance/weight) will build bulky muscles and affect the aesthetic dance body? | 31(13.1) | 73(30.9) | 46(19.5) | 79(33.5) | 7(3.0) | 3.18± 1.12 |
| 4 | Supplementing Pilates able to increase strength, flexibility, balance, and neuromuscular control, and to address | 0 | 10(4.2) | 34(14.4) | 150 (63.6) | 42 (17.8) | 3.95± 0.70 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | alignment discrepancies | | | | | | |
| 5 | Supplementing plyometric training (Eg: jump) able to improve jumping height and overall jump quality. | 1(4) | 2(8) | 39(16.5) | 129 (54.7) | 65 (27.5) | 4.08± 0.71 |
| 6 | There is no need to supplement aerobic exercise (HIIT/Runnin g etc) because normal ballet class routine is sufficient to maintain physical health. | 27(11.4) | 105(44.5) | 52(22.0) | 39(16.5) | 13(5.5) | 3.40± 1.07 |
| 7 | Core stabilization training (CTS) is important to increase the number of | | | | | | |
| | successful pirouettes(tur n) due to improvement in proprioceptio n and ability to make trunk adjustment. | 4(1.7) | 5(2.1) | 39(16.5) | 119 (50.4) | 69 (29.2) | 4.03± 0.84 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 8 | Supplementary training will cause overuse injury to non-professional ballet dancers. | 18(7.6) | 84(35.6) | 73(30.9) | 45(19.1) | 16(6.8) | 3.18± 1.05 |
| 9 | To achieve the aesthetic body in ballet, restricting diet is the only way. | 53(22.5) | 89(37.7) | 48(20.3) | 43(18.2) | 3(1.3) | 3.62± 1.06 |
| | Total score | - | - | - | - | - | 32.85± |
| | | | | | | | 4.68 |

Many studies showed that ballet dancers refuse to participate in ST especially strength training because they believed that strength training will cause hypertrophy of muscle and affect the aesthetic competence of ballet body (Holland 2017). This study supports their findings, there was highest agreement on this negative statement where 79 (33.5%) respondents agree and 5 (2.1%) strongly agree with the statement, 'Strength training (with resistance/weight) will build bulky muscles and affect the aesthetic dance body.' Furthermore, 53 (22.5%) respondents strongly disagree and 89 (37.3%) disagree on the statements, 'To achieve the aesthetic body in ballet, restricting diet is the only way.' This indicates there were more than half NPBD in this study who were aware that ST can help in weight reduction. This result is supported with a study undertaken by Mistiaen et al. (2012) on injury in per-professional dancers, which showed that ST such as aerobic exercise, strength training and motor control exercise in dancers helped in reduction of body fat.

## Conclusion

The level of awareness of ST among NPBD is 73%, which is a high level of awareness. However, it was also noted that the practice of ST among NPBD is not frequent enough. The level of awareness of ST is high while true practice of ST among NPBD is not as desired. Therefore, measures should be undertaken to encourage the NPBD to actively participate in ST which could improve their health status, dance performances and prevent injuries. Future studies may explore the barriers limiting practice of ST among NPBD so that appropriate steps can be undertaken.

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