

Dance injury and prevention strategies in recreational dancers: abridged secondary publication

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KEY MESSAGES

1. Among 1465 dancers, the risk of dance injuries was almost doubled in professional dancers compared with amateur dancers.
2. Among 704 teenage dancers, the three most common sites of dance-related injuries were the knee (14.9%), ankle (14.8%), and lower back (10.4%).
3. Among teenage recreational dancers, scoliosis was an independent risk factor associated with a higher 12-month prevalence of injuries to the lower back (odds ratio=2.7) or knee (odds ratio=2.6).
4. Teenage dancers and their parents perceived that dance training increases the risk of dance injuries; dance injuries can cause negative emotions in teenage dancers; and some dancers may ignore injuries and delay post-injury healthcare seeking.
5. Both teenage dancers and their parents considered that dance instructors are the first person to provide opinions regarding dance injury management.
6. Both online and face-to-face workshops for dance

instructors can improve dance injury prevention knowledge among both instructors and students.

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Introduction

Recreational dance is a popular activity among teenagers and young people.¹ Dance can impose different levels of physical load/stress on various body parts. For example, jazz and breakdance involve many rapid and explosive movements, whereas ballet and Chinese dance involve more repetitive end-of-range movements. Recreational dancers may not have sufficient knowledge to reduce their risks of dance injuries. An epidemiological study revealed that the rates of dance injury among young dancers are similar to those of young gymnasts.² Therefore, it is necessary to identify high-risk dancers and adopt effective dance injury prevention strategies. This study aimed to determine the 12-month prevalence of dance injury among recreational dancers in Hong Kong; to explore perceptions, attitudes, and beliefs towards dance injury prevention among dance students, their parents, and dance instructors; and to evaluate the effectiveness of dance injury prevention programmes for dance instructors.

Methods

This epidemiological study was conducted via

online and face-to-face platforms to evaluate the prevalence of dance injury in amateur dancers. A dance injury questionnaire was developed by a panel of multidisciplinary experts in epidemiology, orthopaedics, physiotherapy, exercise science, and dance science. The questionnaire was then distributed to members of the Hong Kong Dance Federation, the Hong Kong Dance Alliance, and students involved in the Schools Dance Festival.

Focus groups and semi-structured interviews were conducted to solicit opinions from adolescent dancers, their parents, and dance instructors regarding dance injury and its prevention.

To evaluate the effectiveness of dance injury prevention programmes, 58 dance instructors were randomly assigned to one of three groups: a 1-day, six-module face-to-face *SafeDanceTraining* workshop (n=19), self-learning of *SafeDanceTraining* by watching videos and reading materials on an online platform (n=19), or no intervention until completion of the 6-month follow-up (n=20). All dance instructors were required to recruit eight to 10 students who were followed up for 6 months. Both instructors and students were asked to complete a monthly questionnaire regarding dance injuries.

Results

In total, 1465 dancers completed the questionnaire, and 42% of them reported dance-related injuries. Professional dancers reported an average of 4.4 injuries per year, whereas amateur dancers reported an average of 2.6 injuries per year. In the last 12 months, the three most common injury sites were the knee (16.4%), ankle (15.6%), and lower back (13.3%). A higher prevalence of lower back or knee dance-related injuries was associated with dance instructors (odds ratio [OR]=2.5), a history of previous injuries (OR=2.3), pre-professional dancers (OR=2.2), professional dancers (OR=2.1), and scoliosis (OR=1.9).

Among 704 teenage dancers, the most common injury sites in the last 12 months were the knee (14.9%), ankle (14.8%), and lower back (10.4%). A higher prevalence of lower back or knee injury was associated with scoliosis (OR=2.6-2.7) and older age (OR=2-3). Among 175 children and 118 young Chinese dance practitioners, the 12-month prevalence of dance injury was higher among youth aged 15 to 24 years than among children aged 10 to 14 years (52.5% vs 19.6%; 6.5 vs 4.6 injuries per 1000 dance hours). The most common injury sites in the respective groups were the knee (15.3% vs 7.4%), lower back (9.5% vs 4.6%), and ankle (16.9% vs 5.1%). Each additional year of age was associated with a 1.2- to 1.3-fold greater likelihood of sustaining dance-related injuries to the upper back, lower back, and pelvis/buttocks. Taller Chinese dance practitioners had a higher risk of lower limb injury.

Additionally, 33 teenage dance students, eight parents, and eight dance instructors participated in the focus group interviews. Approximately 90% of the student dancers had a history of dance injury. More dance injuries were associated with dance training; dance injuries caused negative emotions; post-injury healthcare-seeking behaviour was influenced by several factors (eg, the 'no pain, no gain' misconception); there were no recommended pathways to follow after a dance injury; and dancers relied on self-perceived effective injury prevention or management methods. Interviews with dance instructors revealed five themes: insufficient knowledge regarding dance injury prevention, tight class schedules affecting injury prevention, strict dance examination criteria causing students to practise repetitive movements, their own history of dance injuries, and the use of specific teaching methods to prevent dance injury.

In total, 58 dance instructors recruited 440 students. However, only 38 instructors and 291 students completed the 6-month follow-up due to the COVID-19 pandemic. Dance instructors showed significant improvements in average dance injury prevention knowledge immediately after completing the face-to-face or online workshop (by 46.8% to 46.9%). This knowledge was retained at the 6-month follow-up. Similarly, dance students in the face-to-face or online workshop group demonstrated significant improvements in dance injury prevention

knowledge at the 6-month follow-up (by 37.7% to 39.7%). Individuals who received no intervention did not show significant improvements in dance injury prevention knowledge. Nonetheless, all three groups showed a significant reduction in dance injury rates among instructors and students at the 6-month follow-up, partly due to less frequent dance practice during the COVID-19 pandemic.

Discussion

The findings of this study were shared with the public during SMART Fun Day 2019 and 2021. A 1-day symposium (DanceMed 2021) was held to educate healthcare professionals, physiotherapy students, and the public about the prevalence of dance injury, common conservative and surgical management approaches, and preventive methods. Free physical assessments and health consultations were provided for recreational dancers. Pamphlets were distributed to attendees at the symposium and to 30 dance schools.

Dance instructors were able to enhance their dance injury prevention knowledge through face-to-face or online workshop, which in turn improved their students' knowledge and awareness regarding safe dance practice. However, intervention effectiveness remains uncertain due to the high attrition rates of instructors and students during the COVID-19 pandemic. Further large-scale studies should be conducted to validate our findings. This project has laid the foundation for further promotion of safe dance practice in Hong Kong. The Hong Kong Association of Dance Medicine and Science will organise similar *SafeDanceTraining* workshops in the future.

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Disclosure

The results of this research have been previously published in:

1. Wong AYL, Chan C, Hiller C, et al. Is scoliosis associated with dance injury in young recreational dancers? A large-scale cross-sectional epidemiological study. *J Dance Med Sci* 2022;26:41-9.
2. Hung RKH, Yung PSH, Ling SKK, et al. Prevalence of dance-related injury and associated risk factors among children and young Chinese dance practitioners. *Medicine (Baltimore)* 2023;102:e36052.

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