



Cross training: Strength and neuromuscular control for performers

What is cross training?

Cross training is participation in additional types of exercise to improve fitness and skill in your own performance area. Performing artists can be considered as athletes; they can benefit from training their strength and neuromuscular control as high level athletes do. Exercise programs, especially those targeting strength and neuromuscular control, have been shown to help prevent injury.

What is strength training?

Strength training can target either muscle strength or muscle endurance.

Muscle strength is trained by lifting heavy weights/loads, for two to three sets of 8-12 repetitions, with approximately two minutes rest between each set, and 48-72 hours of rest between sessions.

Muscle endurance training involves lifting body weight or low loads, for two sets of 15-25 repetitions, two to three times per week.

Endurance training was found to be more useful than strength training in reducing perceived exertion (how tired you feel) whilst playing a musical instrument. Since fatigue was the main contributor to injury reported by Australian professional dancers, endurance training may help reduce this perceived risk factor.

What is neuromuscular control training?

Neuromuscular control training can target balance, proprioception, coordination, agility and skill. Frequently these features may be incorporated into performing arts technique training, however supplemental training may further enhance this, allowing for prevention of injury and improved performance. For instance, balance training has been shown to prevent lateral ankle sprain - a common injury in dance. Neuromuscular control training in playing positions (e.g. in sitting) may ensure bilateral muscle balance, protecting against injuries related to one-sided postures while playing musical instruments. To reduce injury, a program should be performed for 30 mins at least twice per week.

Reducing injury while promoting performance

Direct your strength and neuromuscular control program to support the areas commonly affected in your performing arts discipline, and also seek advice in personalising your program to counteract any personal weaknesses or limitations. In general, research shows that strength training helps prevent injury whereas stretching does not. As any injury increases the likelihood of a future injury in the same area, it makes sense to build strength in the muscles supporting the affected joint and in the surrounding areas. Studies have shown that supplementing technique classes with strength and conditioning training is more beneficial to dance performance than technique classes alone.

Where can I get a program?

In Australia, there are many different qualified exercise professionals, including:

- fitness instructors,
- strength and conditioning coaches,
- exercise scientists,
- exercise physiologists,
- and physiotherapists, as well as titled sports and exercise physiotherapists with higher qualifications and experience



For further information on the treatment you may receive from these professionals, please see the ASPAAH guide 'What Health Professionals Do'). A General Practitioner can advise you on which type of exercise professional is best suited to your specific needs.

Monitoring improvements

Ensure your program is helping you achieve what you desire. Monitor your own perceived exertion (how tired you feel) whilst training and practicing; test how many repetitions you can achieve in a certain task for a specific muscle group; utilise equipment such as dynamometers to quantify your force output; or measure your jump height or distance. In all these cases, an exercise professional can help you with testing, and can advise on appropriate modifications to your program.

Periodisation

Periodisation involves dividing your annual program into blocks, each with different challenges, according to your performance program. The goal is to ensure you are at your peak when you need to be while allowing time for recovery. Aim to commence a program during a less intensive period, to allow your body to adapt positively. As much as you need consistency in your training, the volume and intensity of your overall workload is not always in your control. When your practice/performance program is more intensive, you may need to avoid overtraining by decreasing your additional exercise. These periods may be better spent maintaining your strength and neuromuscular control levels rather than attempting to push them further. The slight reduction will allow your body to adapt to other physical and psychological demands associated with periods of intensive practice and performance.

Are there any risks?

It's a good idea to talk to your doctor before starting an exercise program and to complete the Adult Pre-Exercise Screening Tool (see "Resources"). Strength training interventions are considered to be safe for children and adolescents. In general, risks could include delayed onset muscle soreness (muscle pain or stiffness after exercise), and musculoskeletal injury. However, inaccuracies in the way you perform an exercise can easily creep in, so it is recommended that all programs are regularly supervised by a qualified exercise professional. Further information can be found in the following sites.

Resources

Adult Pre-Exercise Screening Tool: <https://fitness.org.au/articles/policies-guidelines/adult-pre-exercise-screening-system/4/18/20>

Youth Strength Training: www.acsm.org/docs/default-source/files-for-resource-library/smb-youth-strength-training.pdf?sfvrsn=85a44429_2

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