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Neck Strength Training Not Protective Against Head Trauma

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Strengthening the neck through resistance training is not likely to avert head injury in soccer players, according to a recent study.

With soccer balls ripping through the air at high speeds, players may run the risk of long-term cognitive deficits from repeatedly heading the ball.

As has been shown for knees, ankles, and shoulders, strength training a particular joint can afford protective properties. To determine if the same holds true for the head, Jamie Mansell of Lincoln University (Pennsylvania) and associates gathered 36 healthy, elite university soccer players--17 men and 19 women--to explore whether cervical resistance training results in better stabilisation of the head and neck when subjected to a force (J. Athl. Train. 2005;40:310-9).

Nineteen players followed an isotonic neck resistance training program twice a week for 8 weeks; the remaining 17 performed no neck exercises and served as the control arm.

The investigators used an "external force applicator," a high-tech headgear with a pulley system and weight attached, to exert a 50-N load to either the back or the front of the head to assess head-neck stabilisation. They also measured neck flexor and extensor strength, electrical activity of the sternocleidomastoid and upper trapezius muscles in response to a force to the head, and changes in neck girth.

Although neck flexor strength increased by 15% for individuals who underwent resistance training, measurements of head-neck stabilisation were no different before and after the training program. Women in the resistance training group additionally exhibited a 22.5% increase in neck extensor strength and a 4.5% increase in neck girth, but these women still showed no greater head-neck stabilisation.

The investigators concluded that "the neuromuscular plasticity needed to enhance dynamic restraint and reduce head acceleration on force application is not evident" following a "traditional cervical resistance training program" but may be achieved through other types of training, such as plyometrics.