

Main Outcome Measurements Prevalence and characteristics of LBP and C-LBP and their determinants.

Results LBP had a prevalence of 91,6% and 74,2% for lifetime and 1-year respectively, while C-LBP had a prevalence of 23,9%. Prevalence of LBP in Show-Jumping was 61% , in Dressage 13,6%, in Eventing 6,3%, in Horse Country Riding 2,9% and in Reining 2,2%. Weight has a positive association with LBP (O.R. 1.05 95% CI=[1.02, 1.09] $p < 0.05$), while age has a negative association (O.R. 0.95 95% CI=[0.94, 0.98] $p < 0.05$). Practicing activity more than 5–6 hours a week has a positive association with C-LBP (O.R. 1.21 95% CI=[1.05, 1.4] $p < 0.05$). C-LBP is associated with interrupted activity ($p < 0.001$), drugs consumption ($p < 0.001$) and restriction in participation ($p < 0.001$).

Conclusions LBP and C-LBP are very common conditions in equestrian athletes and their prevalence is higher compared to general population and other sports. LBP is more frequent in show-jumping compared to other disciplines. Age and weight are associated with lifetime LBP, with, respectively, a negative and positive association. Athletes with C-LBP showed more disability in activities of daily living (ADLs) and tendency to suspend sports more frequently.

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NEUROMUSCULAR RESPONSES OF THE HAMSTRING AND TRUNK MUSCLES DURING UNANTICIPATED TRUNK PERTURBATIONS

¹Ayako Higashihara, ²Jurdan Mendiguchia, ³Takashi Ono, ⁴Yasuharu Nagano, ⁵Shogo Sasaki, ^{6,7}Shinshiro Mineta, ⁸Norikazu Hirose. ¹Institute of Physical Education, Keio University, Kanagawa, Japan; ²Department of Physical Therapy, Zentrum Rehabilitation and Performance Center, Pamplona, Spain; ³Kitasato University College of Liberal Arts and Sciences, Kanagawa, Japan; ⁴Japan Women's College of Physical Education, Department of Sports Wellness Sciences, Tokyo, Japan; ⁵Faculty of Health Sciences, Tokyo Ariake University of Medical and Health Sciences, Tokyo, Japan; ⁶Graduate school of Sport and Exercise Sciences, Osaka University of Health and Sport Sciences, Osaka, Japan; ⁷The Japan Society for the Promotion of Science, Tokyo, Japan; ⁸Faculty of Sport Sciences, Waseda University, Saitama, Japan

10.1136/bjsports-2021-IOC.123

Background Trunk movement is considered to be involved in lower extremity injuries. Hamstring strain injuries often occur when movements are unanticipatedly perturbed by the opponents.

Objective To examine the neuromuscular responses of the hamstring and trunk muscles during unanticipated trunk perturbations in the athletes with and without a history of hamstring strain injury.

Design Descriptive laboratory study.

Setting College athletes.

Participants Male college athletes were recruited, 11 with a history of unilateral hamstring strain injury and 10 without prior injury.

Assessment In the kneeling position, the participants wore a chest harness attached to a cable that was pulled backward as a resisting force. They were instructed to resist the force isometrically and keep their initial position as possible as they could when the perturbations were applied. The force was released with a cue (CUE) and without cue (NoCUE). Trunk acceleration, three-dimensional kinematic data, and surface electromyography (EMG) signals of the erector spinae, internal oblique, gluteus maximus, biceps femoris, and semitendinosus muscles were measured.

Main Outcome Measurements (1) Maximum trunk acceleration; (2) angular displacement of the trunk, pelvis, hip, and knee; (3) onset latency; (4) EMG activation in the 50-ms window before the perturbation; and (5) EMG activation in the 100ms after the perturbation.

Results The maximum trunk acceleration and displacement were significantly greater during the NoCUE than during the CUE in both groups ($p < 0.05$). The injured group demonstrated significantly delayed onset of the gluteus maximus and erector spinae muscles during the NoCUE compared with the CUE ($p < 0.05$), while no difference was observed in the uninjured group. There was no difference in the phasic EMG activities between groups.

Conclusions Athletes with a history of hamstring strain injury displayed reduction in the neuromuscular coordination of pelvis and trunk muscles when they controlled the unanticipated trunk movement.

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MODIFIED KETTLEBELL SQUATS COULD BE SAFER FOR THE LOW BACK OF ATHLETES WITH LIMITED ANKLE DORSIFLEXION

Sahin Dogukan Kasapoglu, Gulmez Irfan, Selda Uzun, Ramazanoglu Nusret, Goktug Sanli, Vildan Gozde Gumusbas, Yasar Tatar. Faculty of Sport Science, Marmara University, Istanbul, Turkey

10.1136/bjsports-2021-IOC.124

Background Kettlebell squats, holding the kettlebell in front of body, such as goblet squats (GS) can increase range of squat motion. However, the effects of GS variations on postural balance, hip kinematics and their relationship with underlying postural restrictions are not known.

Objective The purpose of this study was to determine the best kettlebell squat exercise variation for improving the strength and postural balance while preserving anterior pelvic tilt for low back health of the athletes with different dorsiflexion range of motion (DFROM) capacities.

Design Single session repeated - measurement

Setting Sport Health Laboratory.

Participants 32 male athletes (22,1 ± 1,8 years; 177,7 ± 5,1cm; 73,3 ± 5,4kg; Training years: 4.9 ± 2.2) were included in this study.

Main Outcome Measurements Athletes performed 8 different squat positions on the force platform. Balance measurements were recorded at 100 Hz for 30 seconds. Kettlebell equipment which was 8 kg, was held (1) close to the trunk (elbows flexed) (GS-EF) and held away from the trunk (elbow extended) (GS-EE) during the goblet squat. Digital inclinometer was used to measure pelvic tilt angle.

Results Postural balance parameters (COP area and antero-posterior sway) during GS-EF were significantly lower in both squat and split squat positions in the dominant leg ($p < 0.001$). However, it was found that posterior pelvic tilt was lower with GS-EE compared to GS-EF, which shows that athletes maintained their neutral lordosis better with GS-EE. In addition, the athletes with lower DFROM posterior tilted more with GS-EF ($p < 0.01$). Posterior pelvic tilt was lower during split GS compared to bilateral GS, meaning athletes stayed closer to their neutral lumbar lordosis during split GS ($p < 0.05$).

Conclusions Athletes with restricted DFROM could incorporate regular or split GS-EE exercises for minimize the low back injury risk. Additionally, higher postural sway during GS-EE