

Effects of external pelvis support on core proprioception and dynamic stability

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Core stability dysfunction is commonly reported in the literature to place an individual at risk for knee, hip or low back injury. **PURPOSE:** The purpose of this study was to examine the effects of external pelvis support on the ability to control the trunk over a mobile pelvis and the planted leg. **METHODS:** Ten healthy participants (7 male; 3 female) performed a core proprioception task and a dynamic landing task while wearing form-fitting, athletic shorts with (PS) and without (NPS) built in pelvis support (PS, Opedix Core-Tec Shorts; NPS, Under Armour Heat Gear Compression Shorts). For the core proprioception task, participants sat on an unstable chair balanced on a hemisphere (44 cm diameter), with eyes closed for three-10 sec trials. Core proprioception performance was represented by the average velocity of the 3D marker path length within the first 5 seconds of the unstable sitting task. Participants also performed 3 single leg landings onto a force platform from a horizontal distance normalized to greater trochanter height. Dynamic stability performance was calculated within the first 2 seconds of the landing phase using the center of pressure (COP) average velocities in the medio-lateral (ML) and anterior-posterior (AP) directions. Paired t-tests were used to compare core proprioception and dynamic stability between pelvis support conditions. **RESULTS:** Core proprioception performance was improved on average by 16.0 % during the PS condition ($p \leq .05$; NPS, 2.1 ± 1.0 cm/s; PS, 1.5 ± 0.8 cm/s). Dynamic stability performance during landing was similar in the ML direction between pelvis support conditions ($p > .05$; NPS, 31.0 ± 4.2 cm/s; PS, 31.3 ± 3.8 cm/s) whereas dynamic stability was improved on average by 4.7% in the AP direction when landing with PS ($p \leq .05$; NPS, 53.2 ± 7.1 cm/s; PS, 50.7 ± 5.8 cm/s). **CONCLUSION:** External pelvis support augmented the ability to control the trunk over a mobile pelvis and the planted leg. External pelvis support may be useful for training or rehabilitating core stability.