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UNDERSTANDING HOW TO READ THE *MSSE*® SUPPLEMENT ABSTRACT INFORMATION

(Fig.1) (Fig.2)

(Fig.3) 0000 *Board #00* 9:00 AM - 10:30 AM (Fig.4)
Presentation / Abstract Title
Jane Smith[1], John Smith[2]. [1]*State University, Anytown, MA.* [2] *City College, Mytown, NY.*
(J. Smith, *Gatorade Speaker's Bureau*) (Fig.5)

Author Index Number

(Fig. 1) This number represents the author index number for each presenter, chair or discussant.

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(Fig. 2) The poster board number for poster abstract presentations can be found in between the author index number and the presentation time.

Abstract Author Block Numbering

(Fig. 3) Superscripted numbers following names in the abstract author block coincide with the numbered affiliation listed at the end of the author block.

Presentation Time

(Fig. 4) This time indicates the presentation time of the abstract being presented, not the session time.

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Abstract Body

For all sessions including abstracts, the abstract body is found in the *MSSE*® section of the Final Program, following this tab.

Abstract Title / Author Blocks

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Session Numbers

The letters in the session numbers represent the following:

A = Tuesday/Wednesday morning
B = Wednesday afternoon
C = Thursday morning
D = Thursday afternoon
E = Friday morning
F = Friday afternoon
G = Saturday morning

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96 Board #2 May 29, 9:30 AM - 11:30 AM

The Effects Of External Pelvis Support On Core Proprioception And Dynamic Stability

Michael J. Decker, Casey A. Myers, Kevin B. Shelburne, Bradley S. Davidson. *University of Denver, Denver, CO.*
Supported by M.J. Decker: *Consulting Fee; Opedix LLC.*

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 and without built in pelvis support (with, PS; without, NPS). 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.

99 Board #5 May 29, 9:30 AM - 11:30 AM

The Relationship between Hip Function and Core Proprioception

Casey A. Myers, Michael J. Decker, Kevin B. Shelburne, Bradley S. Davidson. *University of Denver, Denver, CO.*
(No relationships reported)

The interaction that exists between how the low back is stabilized through core muscles and the function of the hip may help explain mechanisms that lead to low back pain. Little research exists that quantifies this regional interdependence.
PURPOSE: 1) To define the quantitative relationship between clinically relevant measures of hip function and a novel assessment of core proprioception using unstable sitting and 2) To assess the effect of task difficulty on these relationships.
METHODS: Passive maximum hip internal/external range of motion and maximum adduction/abduction hip torque were measured bilaterally on ten healthy participants (7M, 3F) and asymmetry indices (ASI) were calculated. Participants sat on an unstable surface composed of a chair balanced on a hemisphere. Three ten second trials were collected in two task conditions: sphere diameter of 39 cm (more difficult) and 44 cm (less difficult) and two visual conditions: eyes open (EO) and eyes closed (EC). Core proprioception performance was assessed by the 3D path length of markers placed on the corners of the chair surface. Dependent variables were the average velocity of the 3D path length and the maximum 3D path length during the final five seconds of each trial. Hip asymmetries and core proprioception performance were related through Pearson product moment correlations and changes in core proprioception were compared across task difficulty using paired t-tests.
RESULTS: There were moderate positive correlations between path length and internal rotation ASI ($r=0.58$), adduction strength ASI ($r=0.48$), and a negative correlation with dominant leg range of motion ($r=0.46$). These correlations were stronger at the higher level of difficulty and were weaker with lower task difficulty. Path length was significantly higher in EC vs. EO (17.8±12.6 mm/s vs. 6.1±2.6; $p<0.01$) but was not different between lower and higher difficulty unstable sitting tasks.
CONCLUSION: These data indicate that core proprioception declines as hip asymmetries increase, particularly during more difficult tasks. The regional interdependence between the hip and low back is controlled through core muscle proprioception and the quantification of this relationship can assist clinicians in the diagnosis and treatment of low back pain.