PHYSIOLOGICAL AND NEUROMUSCULAR RISK FACTORS OF PREVENTABLE MUSCULOSKELETAL INJURIES IN THE ARMY 101ST AIRBORNE DIVISION (AIR ASSAULT) SOLDIERS: A PROSPECTIVE STUDY

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METHODS

PROCEDURES

KNEE FLEXION/EXTENSION AND TRUNK ROTATION STRENGTH TEST

• Knee flexion/extension and trunk rotation peak torque was assessed with the Biodex isokinetic dynamometer (Biodex Medical Systems, Inc, Shirley, NY) (FIGURE 1)

CONCENTRIC/CENTRIC ISOKINETIC KNEE FLEXION/EXTENSION AND TRUNK ROTATION PEAK TORQUE TEST

• Subjects stood on a plate for 10 seconds
• Three dimensional ground reaction forces were collected (100 Hz) with a force plate (FIGURE 2) and the Biodex with the trunk rotation attachment

HAMSTRING/TRUNK ROTATION FLEXIBILITY (RANGE OF MOTION) TEST

• Active knee extension (for hamstring flexibility) and active trunk rotation range of motion (ROM) was assessed with a digital inclinometer (FIGURE 2) and the Biodex with the trunk rotation attachment

EYES-CLOSED BALANCE TEST

• Three dimensional ground reaction forces were collected (100 Hz) with a force plate (FIGURE 2) and the Biodex with the trunk rotation attachment

BODY COMPOSITION TEST

• Body composition was assessed with The BodPod Body Composition System (Cosmed, Chicago, IL) through air displacement plethysmography (FIGURE 4)

STATISTICAL ANALYSIS

• Independent t-tests or Mann-Whitney U-tests were used for statistical analyses (p<0.05)

SUMMARY AND CONCLUSIONS

• The current investigation revealed several physiological and neuromuscular characteristics that are associated with the Soldiers who later sustain musculoskeletal injuries
• Further analyses on those variables on specific injuries are warranted

REFERENCE

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