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A Consideration on the Center of Gravity Sway in Human Body under Motor Load

——As Observed in Female Basketball Players at Exercise Camp——

By *Mitsuo Sasaki**

The transpositional behavior of the center of gravity in the human body under various motor loads was investigated. The investigation was made at a female college students' basketball exercise camp for differences in the transpositional behavior of the center of gravity (1) between immediately before and after each exercise session, (2) circadian rhythm, (3) daily change in camp and (4) between left-legged and right-legged standing postures.

A gravicoder (Model G4301, made by Anima) was used for transpositional measurements, for 20 seconds of standing on both legs, with eyes open and closed each time, and for 10 seconds each of standing on left and right legs with eyes open and closed.

The subjects of the experiment were seven 19 to 21-year-old female college students experienced in basketball playing for 8 to 9 years. The experiment was carried out from the morning of August 19 through the afternoon of August 24, 1980.

Result and Discussion

(1) The Center of Gravity on Both Legs

The center of gravity in the both-legged standing posture was located at approximately 41% to 48% of the distance from heel to toe. No significant relationship between the position of the center of gravity and motor load could be observed.

(2) Transposition of the Center of Gravity in Both-Legged Standing Posture

Dependence of the positional change of the center of the gravity in length and area upon motor load could not be established in both-legged standing pos-

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ture, with eyes either open or closed.

(3) Transposition of the Center of Gravity in Left-Legged and Right-Legged Standing Postures

The positional change of the center of gravity in length as observed during the exercise period showed a decreasing tendency in either left-legged or right-legged standing position with eyes open. This may be considered practice effect accomplished. Under other conditions, dependence of the center of gravity on motor load could not be established.

(4) Comparison in Positional Change of the Center of Gravity Between Left-Legged and Right-Legged Standing Postures

Dependence of the positional change of the center of gravity upon motor load and superiority of one posture to the other could not be established in respect to length and area, regardless of standing posture and eyes open or closed.