

立位姿勢制御に及ぼす中心視と周辺視機能の 影響に関する実験的検討¹⁾

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A Study of Central and Peripheral Vision as a Function of Postural Control During Quiet Standing

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Abstract

The present study investigated the role of central and peripheral vision in postural control by selectively stimulating either the peripheral or central visual fields. We measured several characteristics of the center of foot pressure (CoP) as indices of postural stability in response to visual stimuli. The visual stimuli consisted of random dots that were either static or made to flicker by 5 Hz, presented in a circular aperture maintaining 33 deg of visual angle. Visual field was manipulated by restricting the visible area of the stimulus to either the central or peripheral visual fields. Results showed that when the visual stimulus was presented in the periphery, the contoured area of CoP passage decreased. The CoP amplitude became reduced especially in the anterior-posterior rather than medio-lateral direction, irrespective of the static/flicker conditions. Such features of the CoP characteristics also appeared when the visual stimulus was presented in the entire visual field including the central (i.e., full-vision condition). Furthermore, in both the peripheral- and full-vision conditions, the total length of CoP passage per unit area appeared to be longer than that in the central-vision condition, with no significant difference between peripheral and full vision. These results indicated that the processing of visuomotor information may be executed faster with the peripheral or full vision than with the central vision. It is therefore suggested that the processing of either the peripheral visual information alone or central plus peripheral visual information greatly contributes to maintaining the postural stability and thus that the peripheral vision has a likely visuomotor function utilized in the control of posture of quiet standing.

Key words: posture control, peripheral vision, central vision, center of foot pressure

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