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1. Please answer the following questions based on the Introduction session of an article "The relationship of fear of falling and human postural control" by Davis JR, Campbell AD, Adkin AL, and Carpenter MG. (from *Gait Posture* 2008 Oct 27 [Epub ahead of print]

1) What are the research questions of the study? (30%)
2) What is the rationale of the hypotheses of the study? (25%)

"Studies have highlighted the importance of understanding the interaction between emotion and balance control [1-12]. For example, older adults with a self-reported fear of falling have been observed to make larger amplitude centre of pressure (COP) displacements during spontaneous sway compared to those without a fear of falling [5]. However, the results of the study by Maki et al. [5] could not be used to discern whether participants became fearful because of an underlying balance deficit, or whether changes in balance were a result of an individual's fear of falling. To address this limitation, elevated surface heights have been used to directly manipulate the level of fear in healthy adults in order to investigate its effect on balance control [6-9]. Individuals standing at surface heights of up to 1.6m have been observed to engage in postural strategy characterized by smaller amplitude and higher frequency COP displacements compared to when standing on the ground [6-9].

There are at least two possible explanations for why the postural differences observed when standing at elevated surface heights [6-9] do not corroborate results observed among fearful individuals standing on the ground [5]. It has been argued that while surface heights of 1.6m are effective for inducing anxiety, they may not be high enough to elicit a robust fear response [9]. Fear and anxiety are known to have different neuroanatomical substrates and physiological outcomes [13-17] and may lead to differences in behavior or action tendencies [14] related to postural control [18-20].

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A second explanation for why elevated surface heights caused different postural changes than those observed between individuals with or without a fear of falling may be that the postural changes observed are related to differences within the visual field that occur at high heights. For example, when standing at elevated surface heights, the eye to horizon distance may increase. Consequently, the inability to focus on close focal visual cues may contribute to postural height vertigo and increased postural sway [21-22]. To address this possibility, previous studies have controlled for the visual perturbation by providing a visual target at a constant eye-to-target distance between heights [6-7]. However, despite this control, a vision by height interaction has been reported whereby characteristics of decreased postural sway were observed between heights when standing with eyes open, but not with eyes closed [6]. Additionally, the eye to ground distance increases when standing at high heights thereby causing a change in the proximity of peripheral visual cues. It has been demonstrated that peripheral visual cues are used to reference self-motion and are important for maintaining postural equilibrium [23-24].Therefore, it is possible that changes in peripheral visual input that occur at high heights may contribute to the postural changes previously observed [6-12], however, this possibility has not yet been investigated.

The purpose of this study was to determine whether the changes in postural control that occur with increased surface height depend on the degree of fear of falling experienced by participants as well as the availability of peripheral visual cues. It was hypothesized that the observed changes in COP would be; (1) dependent on surface height but independent of participant's reported fear of falling and (2) dependent on the availability of focal vision but not peripheral visual cues."

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2. Please in Chinese rewrite the following abstract into a structured format abstract (Purpose, Method, Results, Conclusion) (40%) and 5 keywords (5%). The abstract was adopted from an article "Reaching beyond arm length in normal aging: Adaptation of hand trajectory and dynamic equilibrium" by Paizis C, Papaxanthis C, Berret B, and Pozzo T (from Behav Neurosci 2008;122(6):1361-1370)

"The authors investigated the influence of normal aging upon equilibrium and kinematics features during a whole-body task. Eight young (23 ± 1.51 years) and eight elderly (74.5 ± 4.5 years) adults reached from a standing position an object placed in front of them on the ground. The authors found smaller Center of Masse (CoM) and Center of Pressure (CoP) antero-posterior displacements in elderly than in young adults. Wrist paths were curved in young but straight in elderly adults. Wrist peak velocity and duration were respectively lower and greater in elderly compared to young adults. However, Principal-Component-Analysis did not reveal differences in angle coordination between the two groups, suggesting so that modifications in equilibrium and wrist kinematics reflect an adaptation process that compensates age-related physiological changes. The authors hypothesized that equilibrium preservation in the elderly contributes to wrist kinematics modifications. The authors verified this premise by placing young adults under equilibrium restrictions (reduced base of support) and observing that they reproduced the behavior of elderly adults. The authors propose that wrist kinematics is equilibrium dependent and that such a strategy is included in the motor plan of elderly adults."