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ASSESSMENTS OF PHYSICAL PERFORMANCE IN ELDERLY MANUAL WORKERS

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INTRODUCTION

The world's proportion of elderly above the age of 60 years is said to almost double by the year 2050 [1]. Due to a longer life expectancy, the Danish Parliament recently decided to increase retirement age [2], thereby increasing the amount of elderly workers. However, this increase in retirement age may not be favourable for elderly with physically demanding occupations. The age-related loss of physical performance coupled a potential work-related acceleration of this process may leave some workers unable to perform the physical requirements of their jobs; thus, an increase in retirement age could be problematic for manual workers subjcted to physical loads throughout their working life [3].

Too little is known about the variations in physical performance of elderly manual workers [4], especially during the two last decades of working life. Accodingly, this study seeks to delineate the effects of both age and work on physical performance among manual workers aged 50-70 years.

METHODS

In this cross-sectional study, we will explore the variations in physical performance of 100 elderly (age 50-70 years) Danish manual workers [5]. Subjects will be recruited upon receiving their affirmative response to a questionnaire, which will be sent out to more than 5000 Danish manual workers. The selection will aim to ensure representability over the age-range by recruiting in intervals of five years from 50 to 70 years.

Physical performance will be assessed using several methods (Fig. 1): The inflammatory biomarkers C-reactive protein and interleukin-6 will be measured from venous blood samples (1). Body composition (i.e. fat mass and fat-free mass) will be estimated using bioelectrical impedance analysis (2). Lung function will be assessed using spirometry (3). Static balance will be assessed during quiet standing on a force platform (4), dynamic balance will be measured during a chair-stand motion with five rises as fast as possible (5). Movement variability will be tracked during a hammering task using two motion trackers (6). Handgrip strength and endurance will be measured with a hand dynamometer (7). Fitness (aerobic capacity) will be estimated during steady-state cycling on a bicycle ergometer (8). Flexibility of the spine and pelvis will be assessed with a fingertip-to-floor test (9).

Lastly, the subjects will answer a short questionnaire about general health, smoking habits, leisure-time physical activity, work ability, and musculoskeletal pain and discomfort.

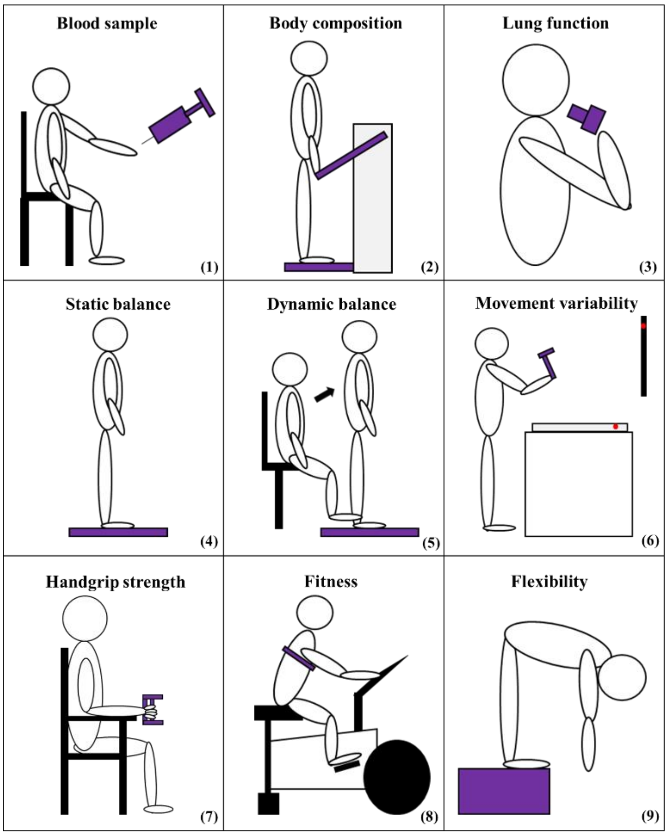

Fig. 1. Illustration of the test-battery in chronological order.

DISCUSSION

An increase in retirement age may be necessary given the general increase in longevity. However, because prolonged exposure to heavy manual work may lead to musculoskeletal disorders [3] and general deconditioning [6], it is uncertain whether an increase in retirement age will be effective for these workers to withdraw from the workforce later. A more detailed understanding of the variations in physical performance in this cohort is therefore warranted.

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