

高齢者が免疫機能を維持するために
最適な日常身体活動の時間帯（タイミング）
～体動計1年連続装着から得られる身体活動データの分析結果～

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**Optimal Levels of Daily Physical Activity to Maintain Immunological
Function in Older Individuals: The Nakanojo Study**

by

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ABSTRACT

The purpose of the present investigation was to examine the optimal levels and timings of daily physical activity to maintain immunological function in older individuals. Twenty older women, aged >65 yr., participated in the present investigation. All subjects were independently living, and were recruited from the NAKANOJO-study. In order to assess the number of steps and the time for moderate to vigorous intensity physical activity, all subjects wore a pedometer with one-axial accelerometer (Lifecorder, Kenz, Nagoya) continuously for 1 year. Furthermore, based on the intensity categories (0 to 9) determined every 2-min, we evaluated the hourly intensity and frequency of physical activity such as the hourly intensity of physical activity, the hourly time for moderate to vigorous intensity physical activity, and the time spent hourly distribution of moderate to vigorous intensity of physical

activity. After the assessment of physical activity, as the index of the immunological function, we assessed the salivary secretory immunoglobulin A and the neutrophil phagocytosis function at the resting condition. As results, the neutrophil phagocytosis function significantly associated with the number of step counts ($p < 0.05$). The salivary secretory immunoglobulin A significantly associated with both the number of step counts and the time for moderate to vigorous intensity physical activity ($p < 0.05$). However, both indexes of the immunological functions did not correlated significantly with the hourly levels of physical activity (hourly intensity of physical activity, hourly time for moderate to vigorous intensity physical activity, the time spent hourly distribution of moderate to vigorous intensity of physical activity). These results indicate that the habitual physical activity have important role to maintain the immunological functions in older individuals. The optimal timing for physical activity to maintain the immunological functions remains unclear.

要 旨

本研究の目的は、高齢者の日常身体活動を加速度センサー付体動計の時系列データを詳細に分析し、免疫機能の確保に最適な身体活動の時間帯(タイミング)を明らかにすることであった。対象者は、自立高齢女性20名であった。対象者は、1年間にわたり、多メモリ加速度計付歩数計を腰部に装着し、1日の歩数と中強度活動時間を評価した。また、2分毎の活動強度に応じて、1時間毎に、活動強度、中強度活動時間、1日の中強度活動の総時間に占める割合を算出した。免疫機能の指標として好中球貪食能ならびに分泌型免疫グロブリンAを測定した。好中球貪食能と歩数、また、分泌型免疫グロブリンAと歩数、中強度活動との間に有意な相関関係が認められた。ただし、両者とも時間帯別身体活動との間に有意な関連が認められなかった。日常身体活動は、免疫機能の維持に貢献すると思われた。ただし、免疫機能を維持するための最適な身体活動のタイミングは不明なままである。