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Impact of Previous Regular Physical Activity on Recovery after Stroke: What Do We Know?

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Short Communication

Stroke is the second cause of death in the world [1] and the direct and indirect annual cost in cardiovascular disease and stroke in the USA is estimated in $320 billion dollars [2]. Ninety days after the event, about 20% of survivors need institutional care and 15-30% remains disabled [3].

The risk factors for stroke, as well as for coronary artery disease, have received great attention due to the possibility of identifying modifiable risk factors that potentially reduce the occurrence of vascular events and outcomes. More than 300 risk factors have been associated with coronary artery disease and stroke, including sedentary lifestyle [4].

The benefits of exercise and its effects on prevention of disease and recovery have been discussed for a long time. It is pointed out as an important modifier of risk occurrence of cerebrovascular events [5]. There is also evidence that physical activity prior to stroke is a protective factor on vascular event severity [6].

There are at least twometa-analysis assessing the risk for stroke development according to previous physical activity [7,8]. First, Lee et al [7], observed that subjects who practiced moderate and high physical activity had lower risk of intracerebral haemorrhage and stroke than those with low intensity.

In another, Wendel-Vos et al [8], found that the lack of physical activity is a modifiable risk factor for stroke and that moderate intensity physical activity is enough to reduce the risks. Finally, Rist et al [9], showed significant reduction of Transient Ischemic Attack (TIA) in men who exercised 5 times a week in comparison with those who exercisedonce a week.

In this context, would physical activity also be a protective factor of greater disability after stroke? Would this result in a lower functional impairment over time? We know that the functional impact of stroke generates costs and profound structural changes in the family organization, and affects the individual quality of life (QoL).

Three studies correlated the previous physical activity with the functional status after stroke in follow up beyond acute phase: Rist et al [9], Stroud et al [10] and Krarup et al [11].

In the largest study [9], 21.794 patients (all male physicians) were followed. The authors observed that there was no significant difference in functional status after stroke across all subgroups classified by physical activity frequency. The patients that exercised more than 5 times per week had lower relative risk to TIA and higher risk of developing severe stroke in acute phase, corroborating the findings of Deplanque et al [6].

On the other hand, a 673 male and female study showed that patients with moderate and high physical activity level were more likely to higher score in the Barthel Index (BI) that shows better functional status after stroke in acute phase and after the follow-up of 3 months. However, among the functionality scores used after stroke - Glasgow Outcome Scale (GOS), Oxford Handicap Scale (OHS) and Barthel Index (BI), only the last one showed statistical significance [10].

Krarup et al [11], followed 265 male and female stroke patients and concluded that those in the upper quartile of physical activity were more likely to suffer a less severe stroke and had a higher chance to have a better functional status two years after stroke.

In contrast to the other studies, Rist et al [9] did not find a positive relation between physical activity and functional status after stroke. This result could be linked to selection bias and study design. Meta-analysis including all three trials comparing the recovery after stroke and physical activity could not be performed because the outcomes were not similar; the frequency was not standardized, as well as the functional status evaluation scale. The results do not allow the analysis of grouped data [12].

The evidence of exercise effectiveness in the functional recovery after stroke is still conflicting. Longitudinal studies with more homogeneous population and standardized analysis of outcomes are needed to observe its real effect on functional status after stroke. However, the known benefits of exercise in reducing risk of cardiovascular and cerebrovascular events uphold the stimulus to preventive behavior, including the propagation of the importance of regular physical activity, delivered by professionals. These behavioral measures could reduce the economic impact caused by chronic diseases and promote better quality of life. Further cost-effectiveness studies are needed to test this hypothesis.

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