
KNEE MUSCLES POWER AND FUNCTIONAL PERFORMANCE IN PATIENTS WITH KNEE ARTHROPLASTY

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Background and Aims

Lower limb muscular power has a strong influence on the quality of gait and on other activities in patients with total knee arthroplasty (TKA). However, directly and objectively assessing muscle power is not always evident in clinical practice, as expensive equipment is required. Thus, there is a need for identifying accessible and easily applicable tests, strongly correlated with muscle power, to be included in the clinical evaluation of these patients. In this regard, functional performance tests could be very helpful. The aim of this study was to assess the relationship between functional performance and knee muscles power in patients with TKA.

Methods

33 patients (17 men and 16 women) were included in a cross-sectional study at six months after TKA. The power of the knee extensor and flexor muscles was assessed by the isokinetic method at the velocities of 60°/s, 90°/s and 120°/s, using a Gymnax Iso 1 Dynamometer. Functional performance was evaluated using the timed up-and-go (TUG), stair climbing test (SCT) and 6-minute walk (6MW) tests. Based on these data, the relationship between functional performance and muscle power parameters was analysed.

Results

Quadriceps and hamstrings power significantly correlated ($p < 0.05$) with all three functional performance tests. The highest level of correlation was found between knee extensor power and TUG test. The correlation was significant ($p < 0.05$) for all the three angular velocities used.

Conclusion

Functional performance tests were highly correlated with knee extensor and flexor power, thus representing valuable tools for completing the clinical examination. On the other hand, as muscle power essentially contributes to improving functional performance, the rehabilitation programs after TKA should address also this parameter, for preventing disabilities and for enhancing long term autonomy.

Keywords: knee, arthroplasty, quadriceps, power, function