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Editorial

Assessment of innovation in prosthetic fitting for transfemoral amputees: A model for asking basic questions of physical and rehabilitation medicine?

The article of Lansade and colleagues, published in this issue of the *Annals* [1], challenges the dogma "the simplest prosthesis for the most disabled amputee", showing the beneficial impact of a microprocessor-controlled knee (MPK) for trans-femoral amputees, who are accustomed to using a mechanical knee (non-MPK). Beyond its satisfactory methodology (multi-centric crossover design), scarce in this research field, this study confirms that, as for other chronic disabilities, technological progress benefits patients with the most severe impairments [2]. It is particularly demonstrative of the difficulty for this applied research in selecting homogeneous groups of patients, particularly for amputation etiologies, the types of prosthetic device, the frequent co-morbidities, as well as locomotion worsening. The findings are further evidence that physical and rehabilitation medicine (PRM) research can be performed mostly on only small series of patients because of the difficulty in homogeneity justifying multi-centric studies to increase the inclusion number. The other essential observation is the decisive role of PRM to define an adapted functional evaluation: the main criteria, the Timed Up and Go Test, is a simple and inexpensive functional test, feasible and relevant to assess a potential technological progress, despite its limitations, as highlighted by the authors.

Like any quality scientific work, this study opens up perspectives and raises key questions that only PRM can eventually answer to meet the health issues ahead:

- validation of functional tests corresponding to different levels of disability and useful in routine practice for assessing gait;
- involvement in innovation in walking assistance, from the conceptual stage to technological development, to move from the current adaptive systems to anticipatory systems (taking into account changes in the immediate environment), which represent one of the possible circumstances for applying artificial intelligence in PRM;
- implementation of medico-economic studies (despite the important methodological difficulties and the main ethical dimension) because progress in autonomy for the most disabled patients must be weighed against the corresponding financial investments.

The editorial board of the *Annals* is firmly committed to a quality policy aimed at fostering scientific production that addresses these fundamental issues of PRM.

Disclosure of interest

The author declares that he has no competing interest.

References

[1] Lansade C, Vicaut E, Paysant J, Menager D, Cristina MC, Braatz F, et al. Dynamic balance, mobility, satisfaction and quality of life in moderately active amputees using microprocessor-controlled knee: a multi-centric randomized crossover trial. Ann Phys Rehabil Med 2018.
[2] Frontera WR. Some reflections on the past, present, and future of physical and rehabilitation medicine. Ann Phys Rehabil Med 2016;59:79–82 [on the occasion of the 30th SOFMER congress].

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