

GLOBAL PERFORMANCE STATUS SCORE: A NEW TOOL TO ASSESS PHYSICAL PERFORMANCE IN KIDNEY TRANSPLANTED PATIENTS

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OBJECTIVES

One major outcome of renal transplantation is improvement of life style, that is made possible by recovery of physical performance. However, as yet, information on physical performance in renal transplant recipients is limited because of shortage of specifically designed evaluation instruments. We elaborated and validated a new tool, the Global Performance Status score (GloPerSta), to provide a simple and comprehensive clinical score, exploring the different components of physical performance in kidney transplant patients.

METHODS

In a cross-sectional study we enrolled 132 prevalent KT patients at different time from transplantation followed-up at a single Nephrology Unit in Italy. We recorded demographic and clinical characteristics and functional physical performance tests including muscle strength, the dynamometer handgrip strength, the tactile sensitivity, VAS pain scale, Time UP and Go test (TUG test) and Fatigue Severity Scale. Functional tests were evaluated as both continuous values and dichotomized (normal vs pathological). Quality of life was assessed by KDQOL-SF score and evaluated as physical and mental self-perceived summary (PCS and MCS, respectively).

Primary endpoints of the study were the definition of physical performance in kidney transplant patients and elaboration and validation of a comprehensive Global Performance Score (GloPerSta)

GloPerSta was elaborated by weighting the different contribution of the single functional tests, via the generation of a standard equation model (SEM).

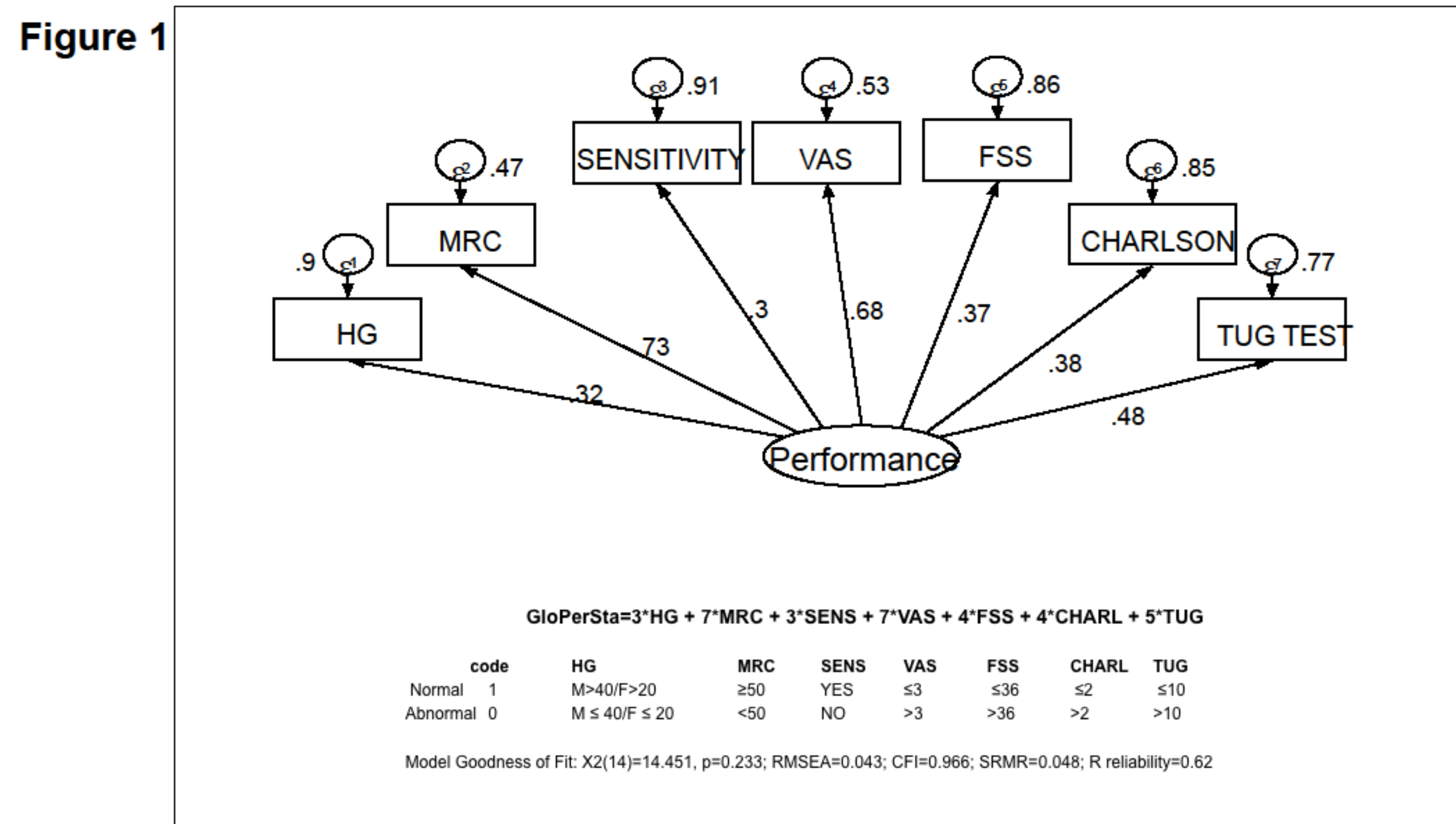


Figure 1: Structural equation model graphical representation (upper panel). Each functional index is thought to be the expression of an unmeasured (latent) overall performance, with different associated weights. The simplified algorithm used to compute GloPerSta is reported in the lower panel, together with the coding of the indices. Abbreviations in the text.

Figure 2

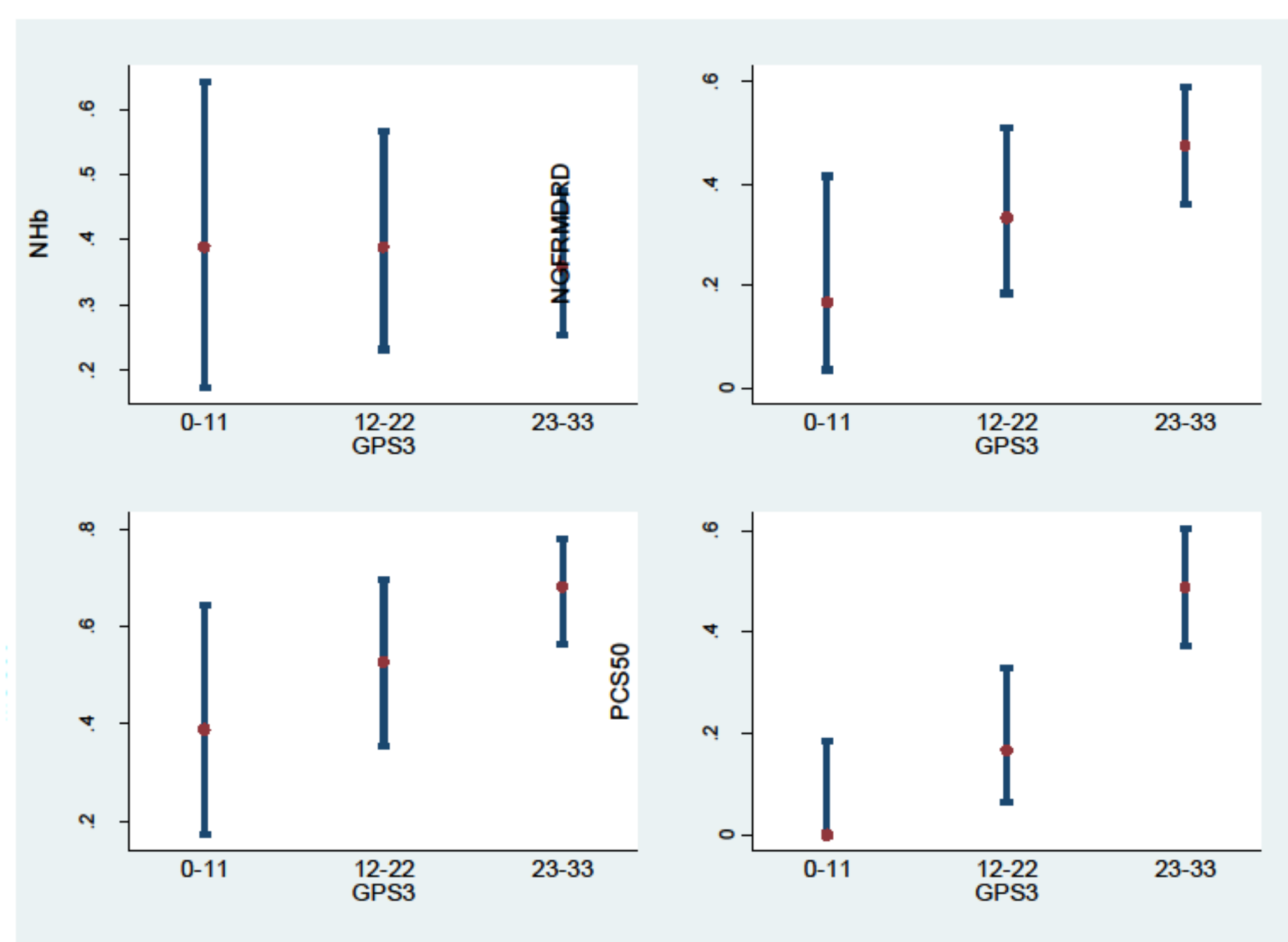


Figure 2: Distribution of the prevalence of normal findings for Hb, GFR, PCS and MCS across the 3 performance groups defined by GloPerSta (GPS3): Poor (0-11), intermediate (12-22) and good (23-33) performance. Abbreviations: NHb= Hb > 11 g/dl; NGFRMDRD= GFR > 60 ml/min as evaluated by MDRD formula, PCS50= normal physical component summary, MCS50= mental component summary.

RESULTS



There was a great heterogeneity in the results of functional tests and no single parameter resulted able to describe the whole population. In particular, 103 patients (78%) presented a normal force in all districts examined, 18 patients (13.6 %) had an overall slightly reduced muscle strength and 11 (8.3%) subjects presents a severely reduced muscle strength. 63 patients (47%) had significantly bilateral impaired handgrip, while tactile sensitivity to four limbs was compromised in 23 patients (17.4 %).

29 patients (21.9%) presented a significant mobility limitation (i.e. TUG > 10 sec), while pain was a problem in 42 subjects (30%).

Among QoL parameters only PCS was significantly lower in KT patients respect to the normal reference level (44.2 ± 0.8 vs ref levels > 50). Interestingly, time from transplantation did not influence the results of any test.

On the basis of the results of the functional tests, we developed a SEM aiming to obtain a synthetic measure of physical performance, the GloPerSta –Figure 1. This score allowed the stratification of the patients in 3 different physical performance categories (low: score 0-11; medium: 12-22; high: 23-33). Internal validation showed that GloPerSta was directly and significantly correlated with the quality of life and allograft function, independently of other factors, such as demographic data and time from KT- Figure 2.



CONCLUSIONS

Evaluation of physical performance and quality of life in KT patients is complex, requiring the use of singular tests exploring the different components of physical function. Therefore, the elaboration of comprehensive scores could constitute a promising and quite new approach to study this issue.

In this view, the GloPerSta seems to be a reliable tool for identifying patients needing of intensive and personalized rehabilitation programs. Other validation procedures are needed to test GloPerSta in largest population and in different clinical settings.

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