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Functional performance 6 months after ACL reconstruction can predict return to participation in the same preinjury activity level 12 and 24 months after surgery

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Abstract: Abstract Background: Assessing athletes' readiness is a key component for successful outcomes after ACL-reconstruction (ACLR). Objectives: To investigate whether return-to-activity criteria, individually or in combination, at 6 months after ACLR can predict return to participation in the same preinjury activity level at 12 and 24 months after ACLR. Methods: Ninety-five level I/II participants completed return-to-activity criteria testing (isometric quadriceps index, single-legged hop tests, Knee Outcome Survey-Activities of Daily Living Scale (KOS-ADLS), and Global Rating Score (GRS) at 6 months after ACLR. PASS group was defined as scoring >90% on all criteria and FAIL group as scoring <90% on any criteria. At 12 and 24 months after ACLR, participants were asked if they had returned to participate in the same preinjury activity level or not. All return-to-activity criteria, except quadriceps index, were entered into the logistic regression model. Results: Eighty-one percent (81%) and 84.4% of the PASS group returned to participation in the same preinjury activity level while only 44.2% and 46.4% of the FAIL group returned at 12 and 24 months respectively after ACLR. The 6-meter timed hop, single hop, and triple hop limb symmetry indexes, GRS, and KOS-ADLS individually predicted the outcome of interest at 12 months after ACLR (Range: $R^2:0.12-0.22$, $p<0.024$). In combination, they explained 27% of the variance ($p=0.035$). All hop tests, individually, predicted the outcome of interest at 24 months after ACLR (Range: $R^2:0.26-0.37$; $P<0.007$), in combination they explained 45% of the variance ($p<0.001$). Conclusion: Returning to participation in the same preinjury activity level at 12 and 24 months after ACLR were higher in those who passed the criteria compared to those who failed. Individual