

Appendix C: Post Operative Return to Jumping/Running

Post-Operative Plyometric Principles

Jumping and plyometric training should occur after achieving sound squatting mechanics and after a period of strength training, but prior to running with the goal of improving kinematics, rate of force development, and tissue tolerance to the load of running. Common faults seen with jumping and landing post-operatively can carry over to faults seen with running that can create pain, swelling, reductions in performance, and increase in likelihood of post-traumatic OA.^{1,2} In addition to knee valgus, these faults can include reduced peak knee flexion angle, reduced peak knee flexion excursion, reduced peak knee extensor torque, and reduced rate of torque development.³ Assessing and improving jumping and landing mechanics with progressive loading prior to running can improve the transition to running and minimize increases in pain and swelling.

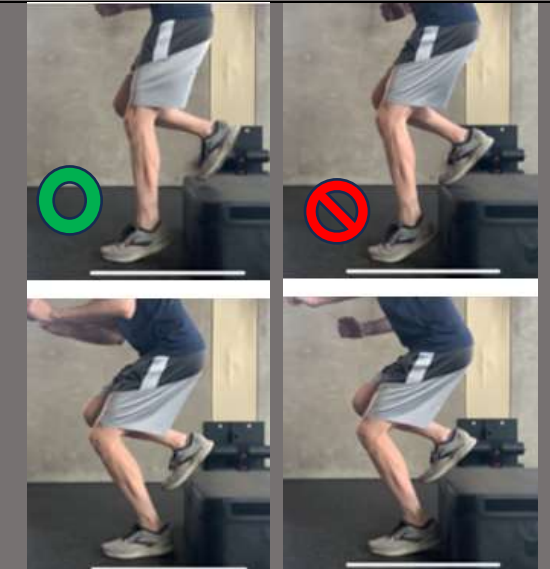
Reduced Peak Knee Flexion Angle

When landing, the involved knee does not flex to an appropriate amount and there is little to no anterior translation of the tibia (quad avoidance). A 10% increase in knee flexion angle limb symmetry index (LSI) with single leg landing tasks is associated with greater odds of having a higher KOOS score.²



Reduced Peak Knee Flexion Excursion

When landing, the involved knee may reach the appropriate amount of knee flexion but the angle does not change much from the point of initial contact to full weight acceptance. Lands with a “bent knee.”



Common Frontal Plane Faults

Increases in dynamic knee valgus, hip adduction, and/or ipsilateral trunk lean.



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References

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3. Pamukoff DN, Montgomery MM, Choe KH, Moffit TJ, Garcia SA, and Vakula MN. Bilateral alterations in running mechanics and quadriceps function following unilateral anterior cruciate ligament reconstruction. *J Orthop Sports Phys Ther*. Dec 2018; 40(12):960-976. doi:10.2519/jospt.2018.8170.