



Pitch Ready Evaluation 06/19/2020

Arthur McGrath
Pitch Ready Club Level
Football - Level 7
Testing Date: 19 June 2020

Pitch Ready Injured Testing Report

Summary of Analysis

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Summary of analysis:

- Clinical Baselines** of the knee are less than optimal and require clinical correlation (PDC) and its with injured knee range of movement at sufficient levels. Excellent neuromuscular stability of the knee (2 mm side-to-side difference).
- Quadriceps strength, EMG/EMG** is asymmetrical (21%), and with peak knee flexion below an ideal range on the injured side (110° knee flexion recommended). Increased hip flexion in comparison to normative values on both sides.
- Medial knee strength** is asymmetrical (24%), with the injured leg below a normal range (40% recommended).
- Statically horizontal leg power** is asymmetrical (24%), with the injured leg below a normal range (1200m recommended).
- Statically vertical leg power** is asymmetrical (24%), with the injured leg below a normal range (1200m recommended).
- Reactive horizontal leg power** is asymmetrical (24%), and remains below a normal range (1100m recommended). **INJURED LEG:** Tendency towards increased rear strike position at time of foot contact on the injured leg, with a relative increase in ankle dorsiflexion and internally rotated lower leg. Tendency towards lower knee flexion position on the injured leg, with a relative increase in knee valgus and increased external rotation. Tendency towards increased hip flexion position on the injured leg, with a neutral hip in the coronal plane, and and increased external rotation. **NON-INJURED LEG:** Tendency towards increased plantar flexion position at time of foot contact on the non-injured leg, with a neutral ankle in the coronal plane, and and internally rotated lower leg. Knee flexion within normal range on the non-injured leg, with a neutral knee in the coronal plane, and and increased external rotation. Tendency towards increased hip flexion position on the non-injured leg, with a neutral hip in the coronal plane, and and increased external rotation. Low ankle stiffness (large NET change in overall position on both the injured and non-injured legs).
- Reactive vertical leg power** is asymmetrical (24%), and remains below a normal range (1100m and 1400m recommended). **INJURED LEG:** Tendency towards increased plantar flexion position at time of foot contact on the injured leg, with a relative increase in ankle dorsiflexion and internally rotated lower leg. Tendency towards lower knee flexion position on the injured leg, with a relative increase in knee valgus and increased external rotation. Tendency towards increased hip flexion position on the injured leg, with a neutral hip in the coronal plane, and and increased external rotation. **NON-INJURED LEG:** Tendency towards increased plantar flexion position at time of foot contact on the non-injured leg, with a relative increase in ankle dorsiflexion and internally rotated lower leg. Tendency towards increased knee flexion position on the non-injured leg, with a relative increase in knee valgus and increased external rotation. Tendency towards increased hip flexion position on the non-injured leg, with a neutral hip in the coronal plane, and and increased external rotation. Low ankle stiffness (large NET change in overall position on both the injured and non-injured legs).
- Change of Direction: UNEXPECTED CUTTING** (190 velocity around items 1 at time of cutting which is above an ideal range). **INJURED LEG:** (190 velocity around items 1 at time of cutting which is below an ideal range). **Change of Direction: INJURED LEG:** Tendency towards increased plantar flexion position at time of foot contact on the injured leg, with a neutral ankle in the coronal plane, and and externally rotated lower leg. Knee flexion within normal range on the injured leg, with a relative increase in knee valgus and increased external rotation. Tendency towards increased hip flexion position on the injured leg, with a neutral hip in the coronal plane, and and increased external rotation. **NON-INJURED LEG:** Tendency towards increased rear strike position at time of foot contact on the non-injured leg, with a neutral knee in the coronal plane, and and internally rotated lower leg. Tendency towards lower knee flexion position on the non-injured leg, with the knee in a normal position in the coronal and axial planes in comparison to normative data. Tendency towards lower hip flexion position on the non-injured leg, with the hip in a normal position in the coronal and axial planes in comparison to normative data.

Athlete Details

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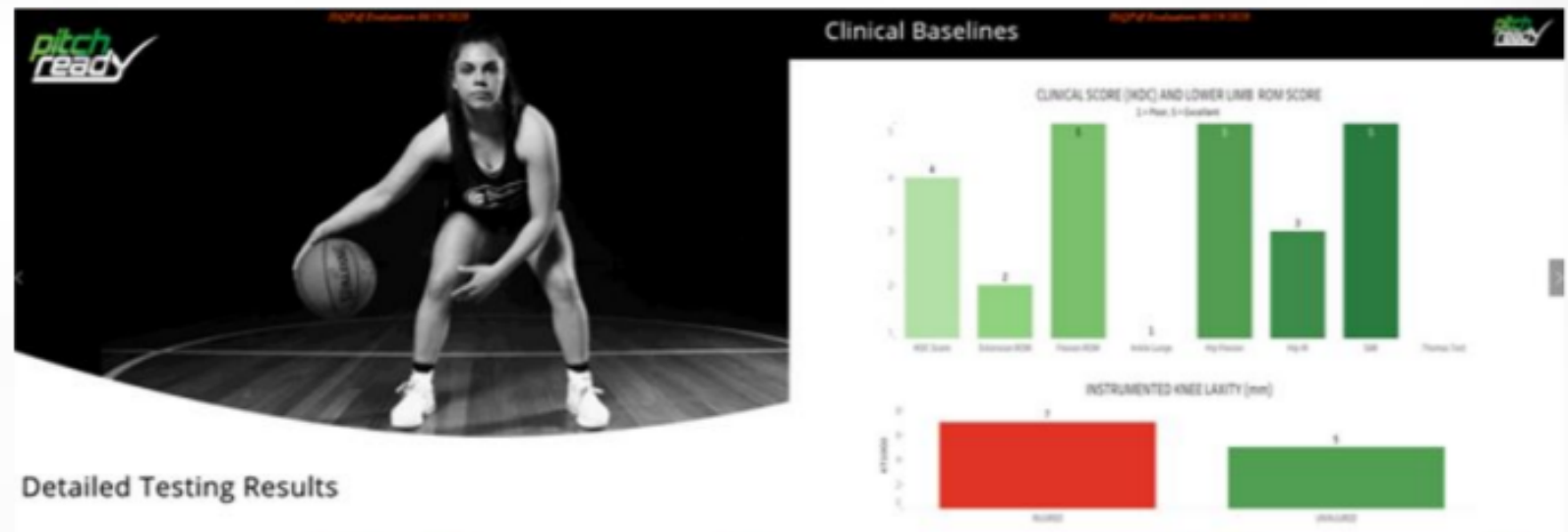
Athlete Name Arthur McGrath	Date of Birth 13 September 2000	Injured Leg Right
Surgeon Name N/A	Surgery Date N/A	Injury Date 20 September 2019
Benchmarking Conducted Clinical	Team / Organization Pitch Ready Club Level Football - Level 7 Cricket (Level 7)	Date of Test 19 June 2020

- Summary of testing undertaken:**
- Clinical Baselines
 - Hamstring Strength
 - Vertical Power: Stationary Jump
 - Quads Strength: Single Leg Squat
 - Horizontal Power: Single Leg Hop Test
 - Reactive Horizontal Power: Cross Hop
 - Reactive Vertical Power: Drop Jump
 - Change of Direction: Unanticipated Cutting

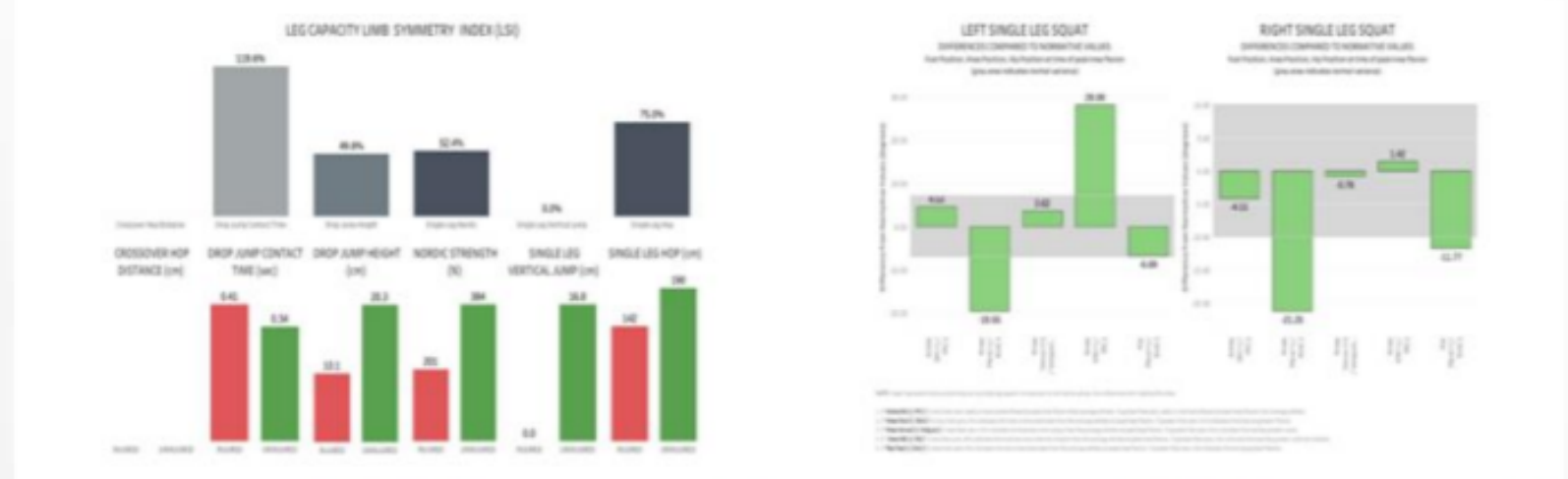
Recommendations

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- Recommendations are as follows:**
- Clinical correlation** of knee stability and PDC values recommended.
 - Quads strength** as defined by single leg squat will not within normal range as a whole on one or both legs, which historically is an important precursor for smooth progression during leg power drills and sport specific skills. Recommended minimum 42 exposures (100-20 repetitions per week) in addition to general compound leg exercises with a mixed emphasis on heavier loads at lower range (including flexion ROM), mixed in with tolerance towards deeper knee flexion load (170-180°) exercises at the knee with lighter loads. Both forms need to ensure no compensation at the hip / trunk.
 - Hamstring strength** below ideal values on one or both legs. Recommended 42 strength exposures per week (spanning 100-20 reps per week), with 1/2 of these single leg in addition to other compound leg exercises. Important to regress the exercise (single or bilateral) so that athlete can sustain 7 days under load as there have been statistically correlated with optimizing fascicle lengths.
 - Increases horizontal leg power:** Medial horizontal leg power not yet normalized. Recommended continuing to focus on increases in strength and concentric power first before moving to eccentric based jumps for this stage of rehab. **Increases reactive horizontal leg power:** not yet within normal values. Generally advocate concentric drills (1-1.5 Hz) 15 reps per week as a priority initially, with a gradual shift towards eccentric drills once jump distance has started to reach normative values. Main drill focus is on ankle drills. Main drill focus is on maintaining current ankle position/deeper knee flexion at time of foot contact maintenance of knee flexion at time of foot contact as well as reducing knee valgus. Recommended also emphasizing low leg flexion with movement.
 - Increases vertical leg power:** Medial vertical leg power not yet normalized. Recommended continuing to focus on increases in strength and concentric power first before moving to eccentric based jumps for this stage of rehab. **Increases reactive vertical leg power:** not yet within normal values. Generally advocate concentric drills (1-1.5 Hz) 15 reps per week as a priority initially, with a gradual shift towards eccentric drills once jump distance has started to reach normative values. Speed of contraction in the form of reduced ground contact times will be a necessary subsequent progression following this. Symmetry is typically a lower focus than absolute power, though a continued emphasis on equality between limbs can help manage all known risk factors. Main drill focus is on ankle drills deeper knee flexion at time of foot contact maintenance of knee flexion at time of foot contact as well as reducing knee valgus. Recommended also emphasizing low leg flexion with movement.
 - Maintainance COD velocity on injured leg:** speed at time of cutting within a normal range on injured leg, but needs to increase on non-injured leg. Recommended keeping open drills at lower velocity and using more conservative velocity-based COD / shuttle drills to progress speed and intensity within controlled drills until normalized. Then aim to blend the two together. Main drill focus is on ankle drills deeper knee flexion at time of foot contact maintenance of knee flexion at time of foot contact as well as reducing knee valgus. Recommended also emphasizing low leg flexion with movement.



Detailed Testing Results



Reactive Lower Limb Power: Drop Jump

