

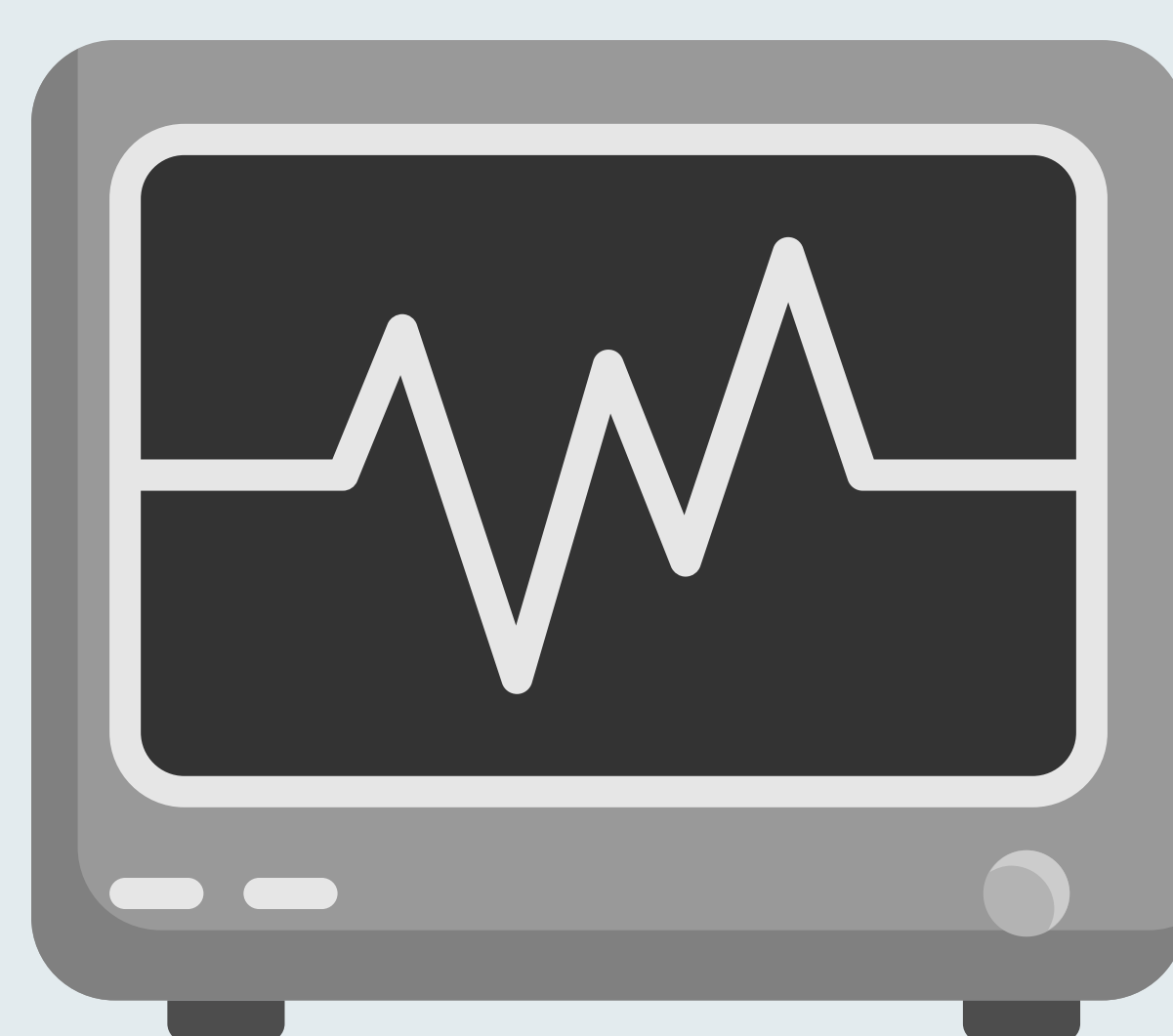
Monitoring Training Load to Understand Fatigue in Youth Athletes

Building a sustainable monitoring system

What is Fatigue?

A practical definition of fatigue from a sport science perspective is the inability to complete a task that was once achievable within a recent time frame.

Fatigue can also be influenced by the type of stimulus (voluntary or electrical), type of contraction (isometric, isotonic, and intermittent or continual), duration, frequency and intensity of exercise, and type of muscle.



Monitoring Fatigue, Recovery and Sleep

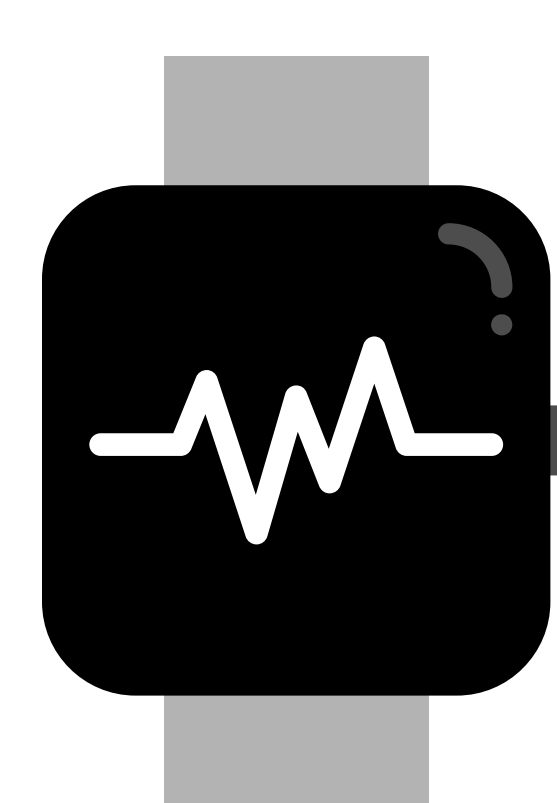
Example 1: Questionnaires



- Sport-specific questionnaires are available, but issues with validity and compliance can limit their usefulness.
- Athletes often tire of completing a daily questionnaire for long periods.
- The quality and timing of feedback for athletes is an important issue for the sport scientist.

Example 2: Wrist Activity Monitors

- Large sample sizes
- Non-invasive
- Causes the least amount of disruption



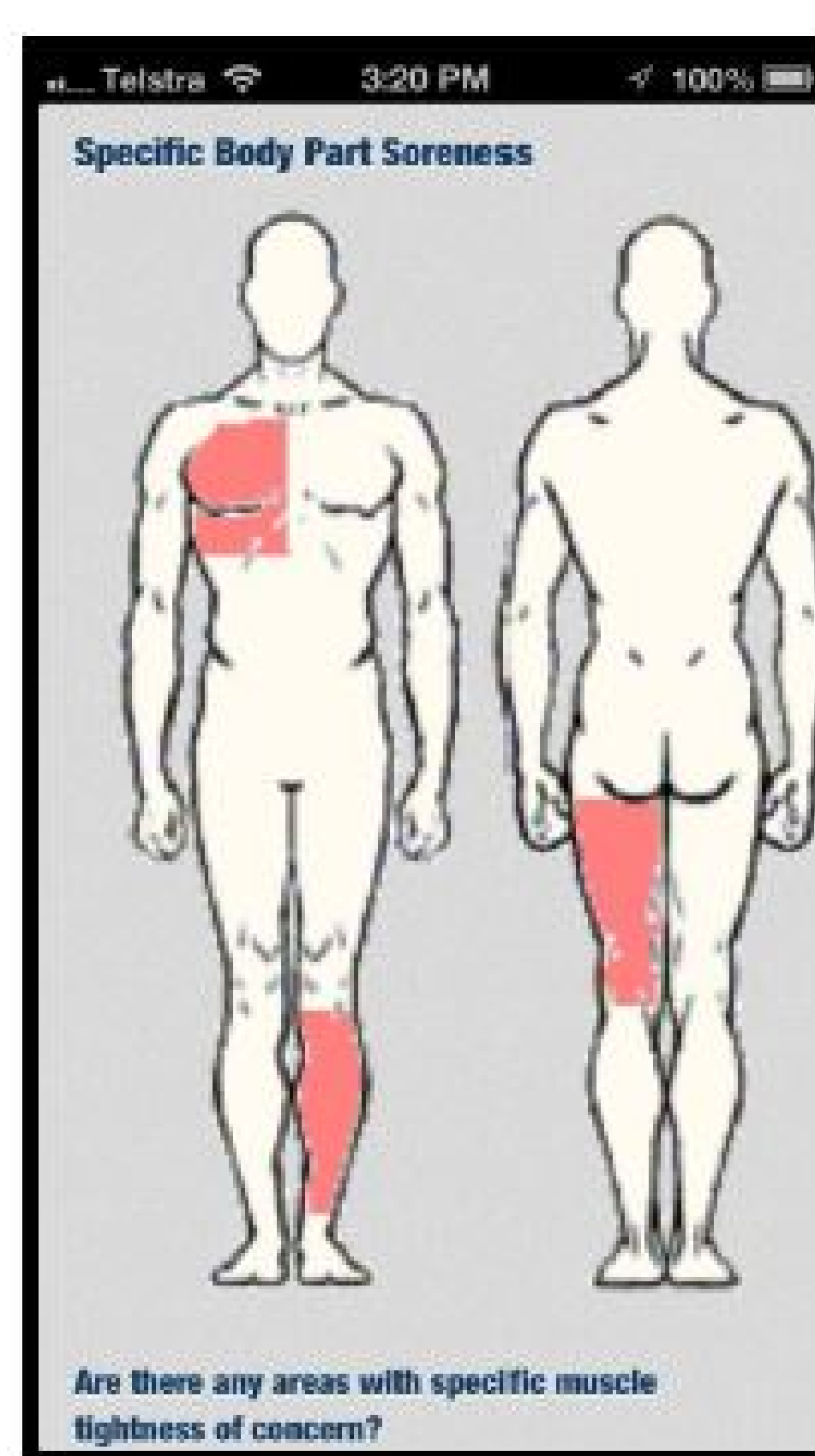
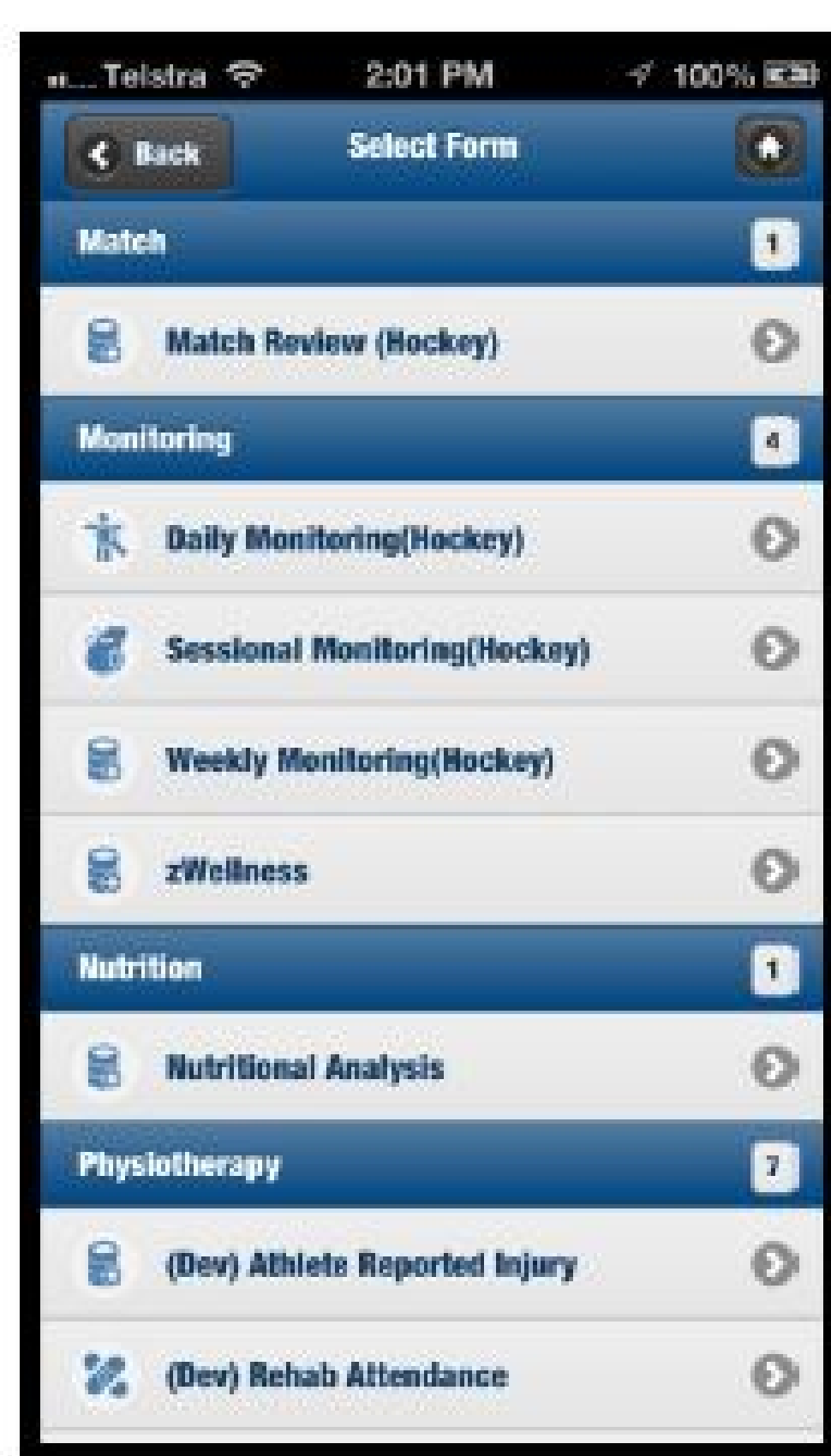
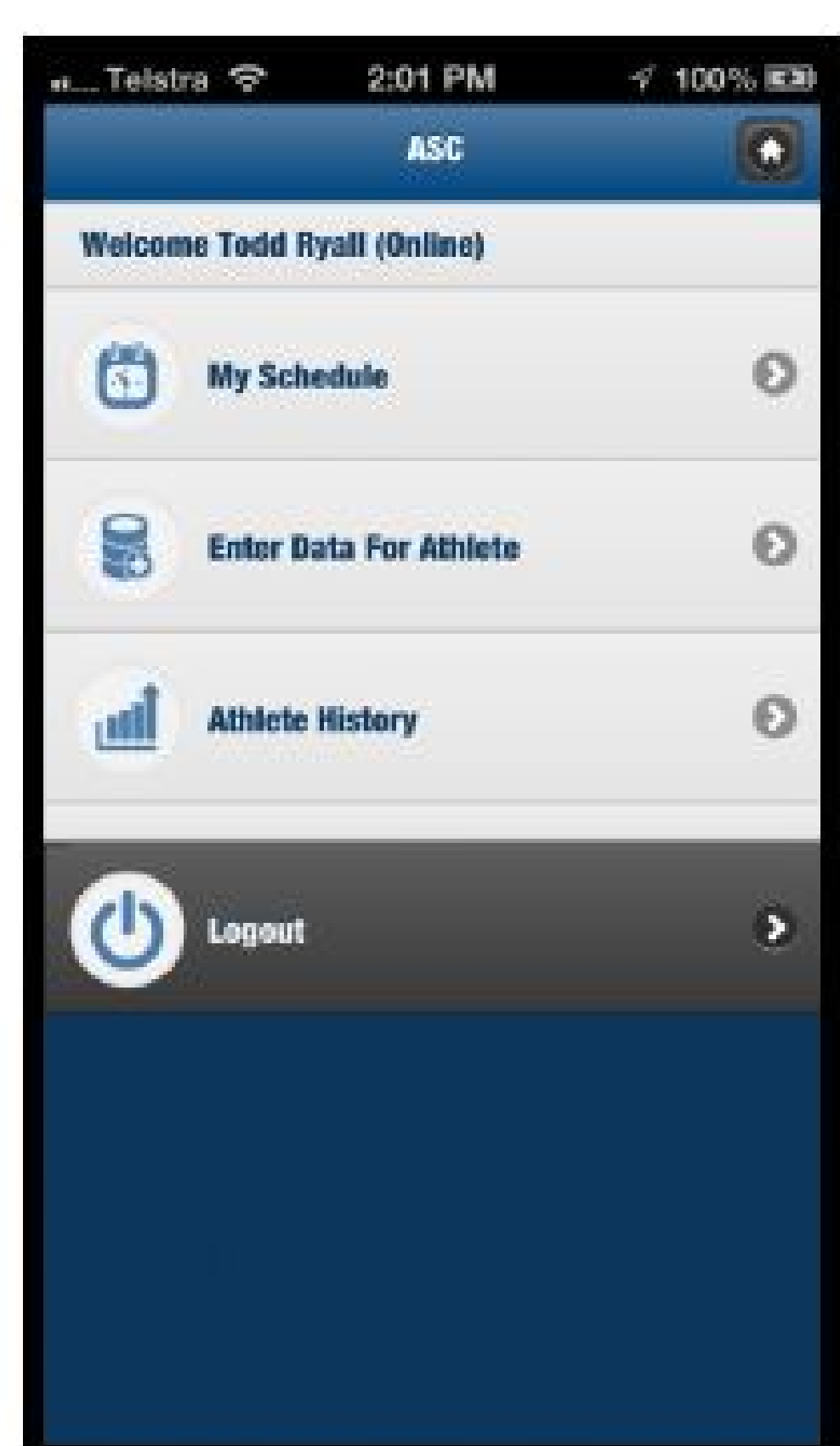
Example 3: REST-Q



- Assesses the recovery-stress state of an athlete
- Physical and mental aspects
- 77 questions
- 7 general stress scales: General Stress, Emotional Stress, Social Stress, Conflicts/Pressure, Fatigue, Lack of Energy, Physical Complaints

System-based Approach

“A systems based approach that integrates well chosen diagnostic tests, with smart sensor technology, and a real-time database and data management system, is the future for fatigue management in elite sport.”



References:

Banister, E. W., & Calvert, T. W. (1980). Planning for future performance: implications for long term training. *Canadian Journal of Applied Sport Sciences*, 5(3), 170–176.

Halson, S. (2014). Monitoring Training Load to Understand Fatigue in Athletes. *Sports Medicine*, 44, 139–147.