

## **Wireless Exercise Monitoring Enhances Cancer Rehabilitation Program**

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### **ABSTRACT**

Cancer rehabilitation increases functional capacity (FC) and health-related quality of life (HRQOL). Exercise monitoring enhances program safety and effectiveness. Advanced monitoring technology and devices may further enhance program quality and integrity. **PURPOSE:** Examine the use of the Zephyr BioHarness in monitoring and analyzing physiological parameters during a 12-week cancer rehabilitation program. **METHODS:** Oklahoma cancer survivors (CS) and caregivers (CG) are recruited to participate in the OBU CARES Program, an evidence-based cancer rehabilitation program designed to promote healthy lifestyles, increase FC, and enhance HRQOL. Programming includes an orientation session, fitness testing, exercise prescriptions (ExRx), and supervised exercise sessions. ExRx are designed based on participant goals, participant preferences, fitness test results, and progression; involving a combination of aerobic, anaerobic, resistance training, flexibility, and Neuromotor exercises. Exercise sessions (45min-1hr, 1x wk) are led by the program director, assisted by student-research assistants. Participants are wirelessly monitored via the Zephyr BioHarness, monitoring 7 live parameters (HR, %HRmax, HRV, BR, activity level, core body temperature, posture) and 23 additional parameters recorded in the database. FC evaluated via modified Bruce ETT, hand grip test, Timed Up & Go (TUG) Test, and sit-and-reach test. HRQOL evaluated via the FACIT-SP (v4) and a modified cancer symptom severity survey. **RESULTS:** 8 CS included in the analysis, completing exercise sessions 65 to  $\geq 85\%$  HRmax. Zephyr software works best on a Windows-based system. Biosensor conductivity is dependent upon BioHarness fit and position, sensor wetting or use of hydrogels, and participant body composition. Data accuracy is dependent on percent HR confidence ( $>80\%$ ). Computer monitor size and location should be visible within the exercise area. Participants indicated that the BioHarness was comfortable throughout exercise activities. **CONCLUSION:** The Zephyr BioHarness is a promising system for cancer rehabilitation programs, with advanced monitoring capabilities. Further study is needed to determine application and effectiveness.