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Technology Use and Confidence in Cardiac Rehabilitation Patients



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Background/Aim: Technology plays an increasing role in supporting cardiac care; use of smartphone applications to aid interventions is common. Cardiac rehabilitation (CR), has not largely adopted consumer-side health technology. This pilot study examines potential for use of technology for cardiac patients.

Methods: Survey patients eligible for CR for technology use/engagement.

Results: Participants' (n=49) mean age was 68.71 years (SD 10.13) and were mostly male (80.43%); 95.12% completed high school and 34.14% were employed. Percutaneous coronary interventions (28.9%) were the most common diagnosis. Almost all patients (98%) used technology and were confident (Fig.1). Most common technology use was for communication through voice calls 97.9%, text messages (89.6%), Skype calls (33.3%), email (64.6%) and social media (33.3%). Other uses were Internet access (60.5%), apps (52.1%), or scheduling/calendars (45.8%); 44.8% shared health information; 27.1% used internet communication with health professionals. 2/3 used the internet for health, medication, heart condition, treatment and lifestyle.

Conclusions: Participants were comfortable with the use of smartphones and make wide use of apps, suggesting the higher mean age of the CR population is a lesser barrier to the potential use of smartphone apps than assumed.

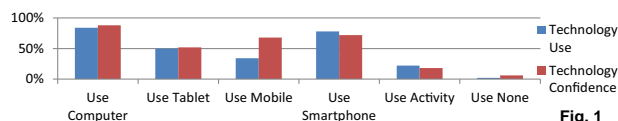


Fig. 1

<http://dx.doi.org/10.1016/j.hlc.2016.06.791>

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Ventilatory Efficiency is Impaired by Atrial Fibrillation and Improved by Cardioversion to Sinus Rhythm



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Background: Ventilatory efficiency describes the relationship between ventilation and CO₂ production ($V_E:VCO_2$ slope) during exercise and strongly associates with heart failure (HF) prognosis. Reduced ventilatory efficiency can be attributed to altered pulmonary vascular tone or ventilatory control mechanisms. Given that AF is frequently observed alongside HF, we sought to determine the impact of AF without HF on ventilatory efficiency.

Methods: 32 patients with AF underwent incremental exercise tests with measurement of pulmonary gas exchange throughout exercise. Of these, 17 patients with persistent AF (PerAF) were in AF during testing, whilst 15 patients with paroxysmal AF (pAF) were in sinus rhythm. In 10 patients with persistent AF, we repeated testing four weeks after successful cardioversion to sinus rhythm.

Results: Patients were well matched with regards to age, height, weight and BP ($p>0.05$), with no significant differences in medication between groups. Peak oxygen consumption (VO_{2peak}) was similar between pAF and perAF ($p=0.21$). However, the $V_E:VCO_2$ slope was significantly higher in perAF (33.2 ± 4.6 v 28.9 ± 4.7 , $p=0.019$) indicating reduced ventilatory efficiency. After successful restoration of sinus rhythm in 10 perAF patients, $V_E:VCO_2$ slope fell from 34.3 ± 4.9 to 30.4 ± 3.9 ($p=0.016$) despite no significant improvement in VO_{2peak} .

Conclusion: Ventilatory efficiency is reduced with persistent AF and is resolved by cardioversion to sinus rhythm, indicating a direct effect of the arrhythmia on ventilatory efficiency. This finding may have important consequences for the understanding of AF and dyspnea-related symptoms. Further studies should explore whether reduced ventilatory efficiency in AF is due to abnormal pulmonary vascular tone or altered ventilatory control mechanisms.

<http://dx.doi.org/10.1016/j.hlc.2016.06.1201>