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### Effectiveness of a social media marketing campaign to increase awareness and membership of a physical activity website



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**Introduction:** The purpose of this study was to examine the benefits and costs of an online social media marketing campaign for 10,000 Steps Australia, an online physical activity project. It examined how a campaign using paid ads would impact the project's reach and engagement on social media as well as influence website hits, website registrations, and mobile app downloads.

**Methods:** A series of online marketing ads were developed for use on Facebook, Instagram and mobile display. The Facebook ads and mobile displays promoted brand awareness and prompted the viewer to Sign Up on the 10,000 Steps website and download the 10,000 Steps app, while the Instagram post was aimed at broader campaign awareness. The online marketing campaign was conducted from 21<sup>st</sup> January to 3<sup>rd</sup> March 2018. The total cost of the campaign was approximately \$33,000 with \$5,000 going to ad development and design and \$27,000 going towards the marketing component.

**Results:** During the campaign period Facebook reached and engaged the target audience with 471,290 impressions, over 8,000 click-throughs to the 10,000 Steps website and 100 direct app installations. Instagram drove awareness by achieving over 800,000 impressions at an efficient cost per 1000 impressions (CPM) rate of \$6.11. Facebook resulted in the highest click through rate (CTR) and lowest cost per click (CPC), however Instagram had the lower cost per 1000 impressions (CPM). Overall the social media campaign resulted in an increase in reach and engagement with social media messages with a total of nearly two million impressions and over 10,000 clicks through to the website as well as increased membership of the website with more than 630,000 website hits, 3141 new users signing up and 1096 mobile app installations.

**Discussion:** The online social marketing campaign was successful in raising awareness of the brand and driving traffic to the website as shown by the increase in website hits, new user sign ups and app downloads during the social marketing campaign period. Using Facebook and Instagram in combination as part of a social marketing media campaign increased reach and engagement with the 10,000 Steps project.

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### Heart rate variability in children influenced by moderate to vigorous maternal exercise, nutrition and smoking during gestation



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**Introduction:** The persistence of autonomic nervous system (ANS) imbalance with sympathetic dominance and parasympathetic withdrawal contributes to an increased risk of cardiovascular disease (CVD) in adults. Modifiable CVD risk factors, such as physical inactivity, poor diet, smoking, and abnormal blood lipids are known to unfavourably alter ANS function, reflected by reduced heart rate variability (HRV). While this relationship has been exam-

ined in adults, limited research exists investigating the effect of modifiable CVD risk factors on autonomic control in children under six years of age. Identification of the strongest modifiable CVD risk factors as early as possible is vital to improving long-term individual and public health outcomes as how these lifestyle risk factors are established in early life have a high conversion rate into adulthood. Therefore, a systematic review was conducted to assess studies examining the effect of modifiable risk factors on the HRV of young children as a determinant of CVD risk.

**Methods:** Following PRISMA guidelines (2009), five electronic databases (PubMed, SPORTDiscus, ScienceDirect, Scopus and PLoS) were searched for peer-reviewed journal articles on human studies published in English language with Full Text between 1996–2018. Included studies had a correlational or longitudinal design examining ANS function of children between 28 weeks gestational age–6 years in relation to CVD modifiable risk factors. Selected studies must have included “healthy” participants and analysed ANS function via HRV time and/or frequency domains.

**Results:** Nine studies fulfilled the inclusion criteria. Eight studies demonstrated that modifiable CVD risk factors significantly ( $p < 0.05$ ) influenced the HRV of children. The strongest associations between ANS imbalance and modifiable CVD risk factors were those of nutrition, smoking and exercise, particularly with respect to the mother. Increases in HRV compared with controls were significantly associated with higher maternal omega-3 fatty acid status, regular ( $\geq 3x/week$ ) moderate to vigorous aerobic exercise during the third trimester and a non-smoking environment. Metabolic profile of mother and child were not significantly associated with ANS imbalance.

**Discussion:** Despite the promising results that the ANS of young children is influenced by modifiable CVD risk factors, there is insufficient evidence to support the strength of this association. In conclusion, the findings highlight the importance of omega-3 fatty acid intake, maternal exercise and a non-smoking environment to reduce CVD risk in children and support the use of HRV in future paediatric studies to longitudinally investigate influences of modifiable CVD risk factors from foetal development throughout childhood.

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### Ultrasound appearance of tape versus suture in rotator cuff repair (evaluating tape in rotator cuff repair)



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**Introduction:** There is a relatively high failure rate in large full thickness rotator cuff repairs. Advances in anchor systems and materials have allowed a wider tape to be used rather than the standard #2 polyester suture. The aim of this study was to determine if there is a difference in the long-term tendon health (re-tear rate and tendon thickness) of patients repaired with tape compared to suture.

**Methods:** This was a longer (minimum 5 years) cohort study of a previously published short term (6 month) evaluation of 150 patients (Tape  $n = 50$ , Suture  $n = 100$ ) who underwent arthroscopic rotator cuff repair with full thickness rotator cuff tears larger than 1.5 cm x 1 cm by a single surgeon. Ultrasound evaluated repair integrity and ultrasonic appearance at six months and a mean 5.5 years post-surgery. Patient-ranked pain and functional scores,