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Review

Physiotherapists use a small number of behaviour change techniques when promoting physical activity: A systematic review comparing experimental and observational studies

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ABSTRACT

Objectives: Physiotherapists promote physical activity as part of their practice. This study reviewed the behaviour change techniques physiotherapists use when promoting physical activity in experimental and observational studies.
Design: Systematic review of experimental and observational studies.
Methods: Twelve databases were searched using terms related to physiotherapy and physical activity. We included experimental studies evaluating the efficacy of physiotherapist-led physical activity interventions delivered to adults in clinic-based private practice and outpatient settings to individuals with, or at risk of, non-communicable diseases. Observational studies reporting the techniques physiotherapists use when promoting physical activity were also included. The behaviour change techniques used in all studies were identified using the Behaviour Change Technique Taxonomy. The behaviour change techniques appearing in efficacious and inefficacious experimental interventions were compared using a narrative approach.
Results: Twelve studies (nine experimental and three observational) were retained from the initial search yield of 4141. Risk of bias ranged from low to high. Physiotherapists used seven behaviour change techniques in the observational studies, compared to 30 behaviour change techniques in the experimental studies. *Social support (unspecified)* was the most frequently identified behaviour change technique across both settings. Efficacious experimental interventions used more behaviour change techniques (n = 29) and functioned in more ways (n = 6) than did inefficacious experimental interventions (behaviour change techniques = 10 and functions = 1).
Conclusions: Physiotherapists use a small number of behaviour change techniques. Less behaviour change techniques were identified in observational studies compared to experimental studies, suggesting physiotherapists use less BCTs clinically than experimentally.

1. Introduction

Physical inactivity has been described as the biggest public health problem of the 21st century[1] and is an important mortality risk factor.[2,3] People worldwide are dying early because they are inactive, with 9% of premature deaths attributed to complications of physical inactivity in 2008.[2] Physical inactivity also has negative implications for disability; being responsible for 6–10% of the burden of disease from long-term health conditions like heart disease, type 2 diabetes, and breast and colon cancer.[2] Reducing the num-

Abbreviations: PLPA, physiotherapist-led physical activity; PA, physical activity; BCT, behaviour change technique.

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ber of people suffering the consequences of inactivity will improve global health.

Physiotherapists believe they have the skills required to implement physical activity (PA) focused interventions.[4] Their training and experience places them in an ideal position to provide PA guidance to a variety of clinical groups.[5] Despite this professional positioning, there has only recently been an increased interest in the research community to explore the efficacy and methods of physiotherapist-led physical activity (PLPA) interventions,[6] which are interventions delivered by a physiotherapist and aim to increase patient PA levels. A recent systematic review reported that physiotherapists can increase patient PA levels.[7] However, it is unclear how physiotherapists typically do this. Therefore, a review of the literature identifying how physiotherapists promote PA is still needed.

Behaviour change techniques (BCTs) can be used by physiotherapists to facilitate behaviour change from being physically inactive to active. A BCT is an observable, irreducible and replicable procedure used as an active ingredient in behaviour change interventions.[8] In other words, these techniques can be used by a physiotherapist to help patients change their behaviour from being physically inactive to active. An example of a BCT is *problem solving*, where the physiotherapist helps a patient to identify barriers to changing a behaviour and finds ways to overcome those barriers to prevent relapse.[8]

The behaviour change technique taxonomy (BCTTv1) is a structured list of 93 BCTs developed by behaviour change experts[8] and can be used to describe the BCTs used by physiotherapists when promoting PA. Using the taxonomy to report the active components of interventions ensures BCTs are reported using a common language, facilitating the comparison of BCTs across studies. The BCTTv1 has been used in systematic reviews to identify the BCTs used by clinical teams, including physiotherapists, delivering group-based self-management interventions to patients with low back pain and arthritis.[9]

Behaviour change techniques, as part of behaviour change interventions, can help change behaviour in many ways. For example, using the BCT *feedback on behaviour* allows the intervention to function in several ways, such as *education*, *persuasion*, *incentivisation*, *coercion,* and *training.*[10] These five functions, together with *restriction*, *environmental restructuring*, *modelling,* and *enablement*, are called intervention functions.[11]

This review aims to identify the BCTs used by physiotherapists when promoting PA in observational and experimental studies to explore differences between BCT use in research and clinical practice. This review expands on the current literature by describing how physiotherapists promote PA to adults with, or at risk of, non-communicable disease in the private practice and outpatient setting.

2. Methods

This review was informed by the PRISMA Statement[12] and the Cochrane Handbook for Systematic Reviews of Interventions.[13] The protocol for this review was prospectively registered on 11 August 2015 (PROSPERO registration number CRD42015024275).

Twelve online databases were searched. Database and Google Scholar alerts were established and citation tracking (forwards and backwards) were used to ensure all appropriate publications were found. Two authors designed the search strategy following the PRISMA statement. The search strategy was consistent with an evidence-based guideline for search strategies,[14] except for a restriction to English language and age (≥18 years). Appropriate keywords, subject headings, wild cards, and truncations were used (Supplement A). Searches were first conducted in August 2015 and updated in May 2017. Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia, www.covidence.org) was used by two blinded, independent reviewers to screen titles and abstracts using a priori screening criteria. Disagreements were resolved by consensus or a third reviewer and full texts were reviewed upon reaching consensus.

A prevalence adjusted bias adjusted kappa (PABAK)[15] was calculated within the R software environment using the epiR package to determine the inter-rater agreement for including or excluding papers. Agreement was scored as poor (<0.00), slight (0.00–0.20), fair (0.21–0.40), moderate (0.41–0.60), substantial (0.61–0.80) or almost perfect (0.81–1.00).[16]

Observational studies reporting the techniques that clinic-based private practice or outpatient physiotherapists use when promoting PA clinically were included. Studies using experimental designs to examine the efficacy of PLPA interventions delivered face-to-face and one-on-one to adults with, or at risk of, non-communicable disease in the clinic-based private practice or outpatient setting were also included. Experimental studies were excluded if they included patients recovering from surgery or with conditions that prevented unsupervised PA as it was unclear if, and to what extent, external factors such as surgery-specific exercise restrictions or lack of supervision influenced PA outcomes in these settings. The efficacy of PA interventions can differ based on context,[17] thus this review was restricted to private practice and outpatient settings only. Experimental interventions including group physiotherapy, only home-based physiotherapy or multi- or interdisciplinary team environments (e.g. hospital or community exercise classes) were excluded to ensure this review was focused.[13] Interventions could include additional methods, such as telephone contact and home exercise programs, in addition to a clinic-based intervention.

Two reviewers used three tools to independently assess the studies for bias. The Cochrane Risk of Bias tool[18] and The Quality Assessment Tool for Before-After (Pre-Post) Studies with no control group[19] were used to assess bias in studies using a control group and those that did not, respectively. The Downs and Black checklist[20] and additional resources[21,22] were used to design a bias assessment tool to identify risk of bias in observational studies. Risk of bias was classified as low, moderate or high for all studies.

Study protocols, supplementary appendices, supporting studies, and additional information from authors were used to identify intervention and study components. This information, together with the published study, was used to complete the Template for Intervention Description and Replication (TIDieR) Checklist for all interventions, providing a structured outline of the delivered intervention.[23]

Data extraction and risk of bias assessment for all included studies was performed independently by two authors. All necessary data were extracted from studies and separated by study design: experimental or observational.

Experimental studies used designs such as pre-post, quasi-experimental and randomised controlled trials (RCTs) to examine the efficacy of PLPA interventions. These studies reported on the efficacy of PLPA interventions and described the techniques used by physiotherapists to deliver the interventions. Observational studies used questionnaires to identify the techniques physiotherapists use when promoting PA as part of their regular practice, as opposed to when participating in experimental studies.

Published results from experimental studies were used to establish intervention efficacy and allocate interventions to groups. Interventions were categorised into three different groups: (i) Studies demonstrating a statistically significant between-group difference favouring the intervention were grouped as efficacious interventions (EI); (ii) Studies demonstrating no significant differences favouring the intervention were grouped in an inefficacious interventions (IEI) group; and (iii) All studies that did not use a