We are failing to improve the evidence-base for "Exercise Referral": How a Physical Activity Referral Scheme Taxonomy can help

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BACKGROUND

Increasing physical activity (PA) is a global public health priority.[1] For decades, exercise referral schemes (ERS) have been a popular way for healthcare professionals in primary and secondary care to help patients increase their PA.

Delivery of ERS varies widely, with the construction of an evidence base informing 'what works best' limited by a lack of understanding about what individual schemes deliver and how.[2] Between-scheme analyses are extremely challenging due to varying quality of reporting (e.g., of scheme delivery components and processes) and evaluations.[3,4] As a consequence, overviews of ERS evidence[5,6] are flawed by combining heterogeneous interventions (e.g., falls prevention via physiotherapist referral and hypertension management via GP referral) and datasets.

Collectively, the underwhelming findings of such overviews lead to concerns over commissioning ERS, and the inability of national policy and best practice guidelines to recommend a 'gold standard' structure, or even comment on "what good looks like".[5] We do not know whether local tailoring of ERS is more effective and efficient than a standardised approach.

To advance knowledge and practice about ERS, we therefore propose a universal classification taxonomy, grounded in practice-based experience and theory. We believe this will help appropriately identify meaningfully different ERS classifications, leading to improvements in the interpretation and understanding of the evidence base for policy makers and practitioners.

Is the term Exercise Referral Scheme outdated?

As traditionally defined, ERS contain four essential components: (i) an assessment involving a healthcare professional to determine that someone who has a health condition or other factors that put them at risk of ill-health, is sedentary or inactive, (ii) referral by this professional to a PA specialist or service, (iii) a personal needs

assessment by the specialist or service and (iv) an opportunity to participate in a PA programme.[2,7,8]

This definition now fails to represent a myriad of innovations in both evidence-informed models, and contemporary practices, which support PA uptake. We suggest that 'physical activity referral scheme' more appropriately describes the range of interventions offered. Specific examples include entry routes via self-referral or from other professionals (e.g., health trainers) and group-based needs assessments. Our taxonomy therefore encompasses all PA schemes that:

(a) have the primary aim of increasing physical activity,

(b) have a formalised referral process,

(c) are provided for individuals who are inactive/sedentary, and/or have *or are at risk of* a health condition.

These inclusion criteria enable us to usefully classify and compare traditional ERS alongside rapidly emerging innovations as described above. We acknowledge that inactive but otherwise healthy individuals attend schemes, despite current recommendations that ERS are only for those with, or at risk of, health conditions.[2] We exclude therapeutic ERS provided by health practitioners in a clinical environment (e.g., physiotherapy-based rehabilitation in hospitals), general signposting to PA opportunities or social prescribing where increasing PA is not the direct service aim.

Thus, the first distinction the taxonomy requires the user to make is between "Traditional ERS" (think classic assessment-based referral from a GP to a supervised gym session) and "non-traditional PA referral" (think new trends for social prescribing, self-referral and digital interventions).

THE PHYSICAL ACTIVITY REFERRAL SCHEME TAXONOMY

Our proposed taxonomy operates at three levels:

Level 1: Classification. This high-level classification allows for the identification of scheme sub-categories for study and comparison (Figure 1). It details whether a scheme is traditional or non-traditional, who the provider is, whom it is for and activities offered.

INSERT Figure 1. Physical Activity Referral Scheme Classification Framework

Level 2: Characteristics. This level builds understanding by creating a picture of "what good looks like". It includes details about commissioning, funding, behaviour change theory, staff qualifications/structures, referral and scheme processes and exit routes.

Level 3: Participant measures. This level builds understanding about the availability of participant and evaluation data. It includes details of demographics, number of referrals, uptake, attendance and adherence, and measures of change.

We present all components in a "Proto-Reporting Checklist" (supplementary file 1).

HOW TO USE THE PHYSICAL ACTIVITY REFERRAL SCHEME TAXONOMY AND NEXT STEPS

We propose using the taxonomy as a reporting checklist in the practice-based and academic literature, a classification system for evidence reviews of delivery and effectiveness, and an audit and monitoring tool for commissioners and providers to capture service delivery.

In terms of next steps, we invite comment, critique and engagement from the policy, practice and academic sectors. To this end, we are delivering practitioner and expert consensus events for late 2019. We are presenting this as an idea, not the finished

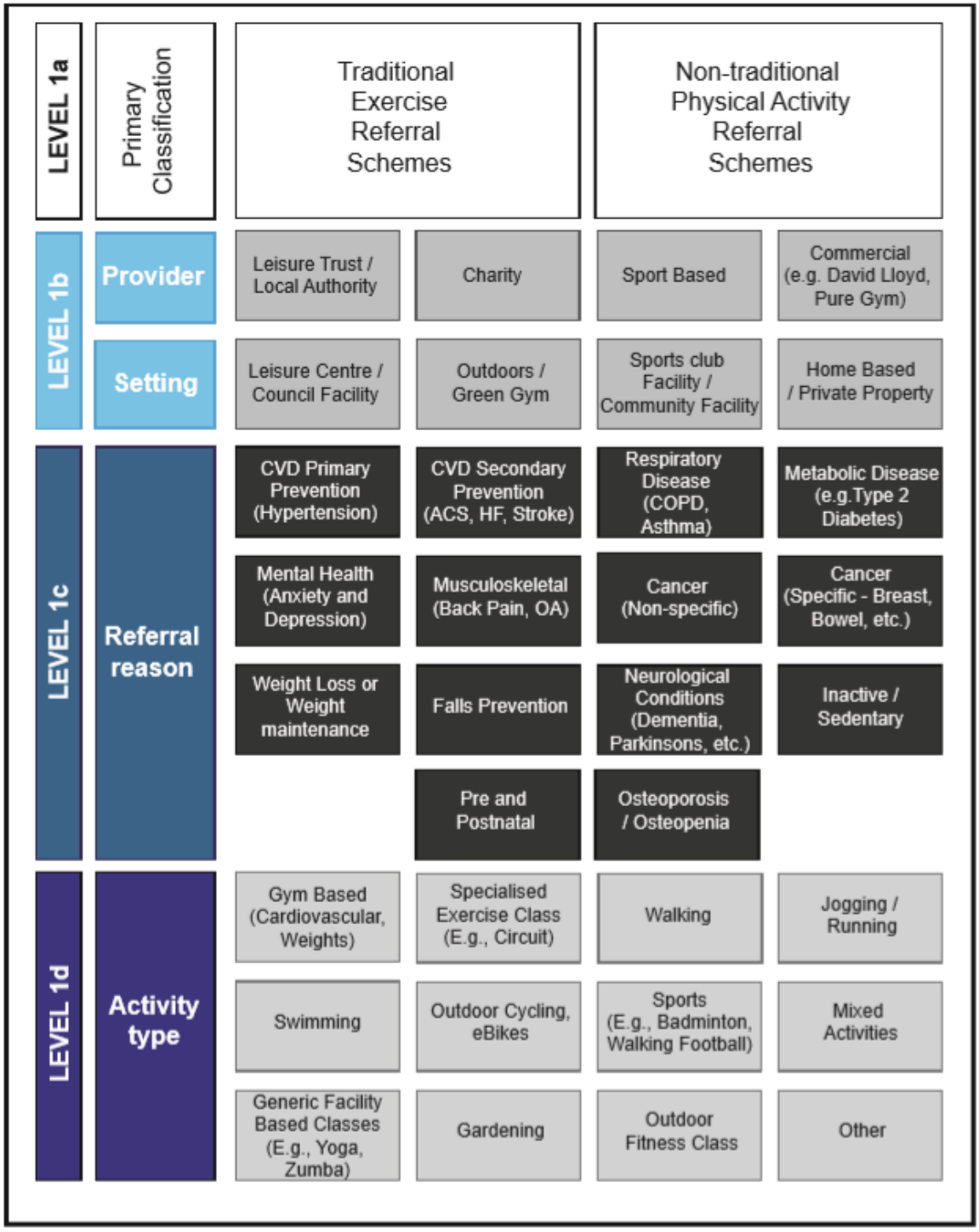
product, and are keen to seek consensus on what factors are appropriate, what needs changing, and what needs adding. We believe that an agreed framework will benefit implementation of physical activity referral schemes internationally, and ultimately benefit population health. The next step is to test the utility of the taxonomy to meaningfully classify reach, uptake, efficacy (or effectiveness) of the different scheme types.

References

1. Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2018). Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1·9 million participants. Lancet Global Health, 6(10), e1077-e1086. doi:10.1016/S2214-109X(18)30357-7.
2. National Institute for Health and Care Excellence. *Physical activity: exercise referral schemes*. National Institute for Health and Care Excellence, 2014. https://www.nice.org.uk/guidance/ph54/resources/physical-activity-exercise-referral-schemes-pdf-1996418406085. (Accessed 14 Aug 2019).
3. Oliver EJ, Hanson CL, Lindsey IA, Dodd-Reynolds CJ. Exercise on referral: evidence and complexity at the nexus of public health and sport policy. *International Journal of Sport Policy and Politics* 2016;8:731–6.
4. Pakraven A and Jones A. *Exercise Referral Schemes in Primary Care: Where does Sport and Exercise Medicine Stand?* Blog, British Journal of Sports Medicine. https://blogs.bmj.com/bjsm/2014/03/16/exercise-referral-schemes-in-primary-care-where-does-sport-and-exercise-medicine-stand/. (Accessed 24 Oct 2019).
5. Campbell F, Holmes M, Everson-Hock E, Davis S, Buckley Woods H, Anokye N, et al. A systematic review and economic evaluation of exercise referral schemes in primary care: a short report. *Health Technol Assess* 2015;19(60):1-87.
6. Pavey TG, Taylor AH, Fox KR, Hillsdon M, Anokye N, Campbell JL, et al. Effect of exercise referral schemes in primary care on physical activity and improving health outcomes: systematic review and meta-analysis. *BMJ* 2011;343.

7. British Heart Foundation National Centre for Physical Activity and Health. A Tool Kit for the Design, Implementation & Evaluation of Exercise Referral Schemes. British Heart Foundation National Centre for Physical Activity and Health, 2010. http://www.ncsem-em.org.uk/resources/exercise-referral-toolkit/. (Accessed 14 Aug 2019).
8. Department of Health. Exercise referral systems: A national quality assurance framework. Department of Health. 2001. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4009671. (Accessed 14 Aug 2019).

Figure 1.


LEVEL 1a
Primary Classification
Traditional Exercise Referral Schemes
Non-traditional Physical Activity Referral Schemes
LEVEL 1b
Provider
Leisure Trust / Local Authority
Charity
Sport Based
Commercial (e.g. David Lloyd, Pure Gym)
Setting
Leisure Centre / Council Facility
Outdoors / Green Gym
Sports club Facility / Community Facility
Home Based / Private Property
LEVEL 1c
Referral reason
CVD Primary Prevention (Hypertension)
CVD Secondary Prevention (ACS, HF, Stroke)
Respiratory Disease (COPD, Asthma)
Metabolic Disease (e.g.Type 2 Diabetes)
Mental Health (Anxiety and Depression)
Musculoskeletal (Back Pain, OA)
Cancer (Non-specific)
Cancer (Specific - Breast, Bowel, etc.)
Weight Loss or Weight maintenance
Falls Prevention
Neurological Conditions (Dementia, Parkinsons, etc.)
Inactive / Sedentary
Pre and Postnatal
Osteoporosis / Osteopenia
LEVEL 1d
Activity type
Gym Based (Cardiovascular, Weights)
Specialised Exercise Class (E.g., Circuit)
Walking
Jogging / Running
Swimming
Outdoor Cycling, eBikes
Sports (E.g., Badminton, Walking Football)
Mixed Activities
Generic Facility Based Classes (E.g., Yoga, Zumba)
Gardening
Outdoor Fitness Class
Other

Supplementary file 1.

Characteristics of Physical Activity Referral Scheme Reporting Checklist		
Level 1 Physical Activity Referral Scheme Classifications		
1a Primary classification	Tick all that apply	Additional comments
Traditional exercise referral scheme		
Non-traditional physical activity referral scheme		
1b Provider	Tick all that apply	Additional comments
Charitable Leisure Trust / Local Authority		
Other Charity		
Sport based		
Commercial/private provider		
Other (define)		
1b Setting	Tick all that apply	Additional comments
Leisure centre / council facility		
Outdoors		
Green gym		
Sports club		
Community facility		
Commercial gym		
Other commercial setting (define)		
Home-based		
Other (define)		
1c Referral reason	Tick all that apply	Additional comments
Cardiovascular primary prevention (e.g. hypertension)		
Cardiovascular secondary prevention (e.g. post MI, heart failure, stroke)		
Respiratory disease (e.g. COPD, asthma)		
Metabolic disease (e.g. type 2 diabetes)		
Mental health (e.g. anxiety and depression)		

Musculoskeletal issues (e.g. back pain, osteoarthritis)		
Cancer (nonspecific)		
Cancer specific (breast, bowel etc.) (define)		
Weight loss or weight maintenance		
Falls Prevention		
Neurological disease (Dementia, Parkinsons etc.)		
Inactive / sedentary		
Pre and post-natal		
Osteoporosis / Osteopenia		
Other (define)		
1d Activity type	Tick all that apply	Additional comments
Gym-based (CV and weights)		
Specialized physical activity referral scheme exercise class (e.g. circuit)		
Walking		
Jogging/running		
Swimming		
Outdoor cycling, e-bikes		
Sports (e.g. badminton, walking football)		
Mixed activities		
Generic facility class programme (e.g. yoga, aerobics)		
Gardening		
Outdoor fitness class		
Other (define)		
Level 2 Physical Activity Referral Scheme Characteristics		
2a Commissioning	Tick all that apply	By Whom
Commissioned		
Not commissioned		
2b Funding source	Tick all that apply	Amount (per participant)

Funded by commissioner		
Internally funded by provider		
Participants pay for physical activity referral scheme		
2c Staff structure	Tick all that apply	Define
Contracted staff		
Self-employed staff		
2d Staff qualifications	Tick all that apply	Define
Physical activity referral scheme qualification		
Higher level condition specific qualification		
Other (state)		
2e Behaviour change theory	Tick all that apply	Define
Based on specific behaviour change theory		
Specific behaviour change techniques included		
Not based on specific behaviour change theory		
2f Referral Source	Tick all that apply	No. of referrals per year
Primary Care		
Secondary Care		
Other (state)		
2g Referrers	Tick all that apply	Additional comments
GP		
Practice Nurse		
Physiotherapist		
Psychologist		
Rehabilitation professional		
Health trainers		
Self-referral		
Other (state)		
2h Referral process	Tick all that apply	Additional comments
Printed and posted		
Printed and given to participant to take to physical activity referral scheme		

Via online portal		
Self-referral		
2i Duration of scheme	Tick one	State exact duration
Number of weeks client can attend scheme		
No defined length (open-ended)		
2j Session type	Tick all that apply	Additional comments
Physical activity referral scheme supervised group based exercise sessions		
Physical activity referral scheme supervised individual exercise sessions		
Independent exercise following assessment		
Generic physical activity referral scheme supervised sessions for all conditions		
Condition specific physical activity referral scheme supervised sessions		
Independent exercise choices without assessment		
2k Session Frequency	Tick all that apply	Additional comments
1x per week		
2x per week		
3x per week		
More than 3x per week		
2l Equipment loan	Tick one box	Define equipment
Yes		
No		
2m Baseline assessment	Tick all that apply	Define measures
Yes (state what is included)		
Physiological measures (BP, weight, BMI etc.)		
Level of physical activity (e.g. self-report questionnaire)		
Wellbeing measures (e.g. Wellbeing questionnaire)		
Behaviour change techniques/measures (e.g. exercise confidence measure, goal setting etc.)		
Exercise plan		
Other (state)		

No		
2n Exit assessment	Tick all that apply	Define measures
Yes (state what is included)		
Physiological measures (BP, weight, BMI etc.)		
Level of physical activity (e.g. self-report questionnaire)		
Wellbeing measures (e.g. Wellbeing questionnaire)		
Behaviour change techniques/measures (e.g. exercise confidence measure, goal setting etc.)		
Exercise plan		
Other (state)		
No		
2o Feedback provided to referrer	Tick all that apply	Define measures
Yes (state what is included)		
Attendance		
Physiological measures (BP, weight, BMI etc.)		
Change in PA behaviour		
Change in wellbeing		
Other (state)		
No		
2p Exit routes	Tick all that apply	Additional comments
Formal exit route (defined sessions for completers)		
Signposting to other activities		
Open-ended (no exit route required)		
2q Action in case of non-attendance	Tick all that apply	Additional comments
Participant contacted by telephone/text		
Participant contacted by letter		
Participant not contacted		
Level 3 Participant Measures		
3a Sex	Tick if recorded	Define
State how defined *(e.g. male, female, intersex)*		
3b Age	Tick if recorded	Define

Minimum age		
Maximum age		
3c Socio-economic status	Tick if recorded	Define
State how defined (e.g. index of multiple deprivation from postcode)		
3d Ethnicity	Tick if recorded	Define
State how defined		
3e Employment status	Tick if recorded	Define
State how defined		
3f Education status	Tick if recorded	Define
State how defined		
3g Other demographic measure	Tick if recorded	Define
State what and how defined		
3h Number of referrals	Tick if recorded	Additional comments
Number of referrals received per annum		
3h Uptake, attendance and adherence	Tick if recorded	Additional comments
Uptake (number of referrals that attend baseline assessment)		
Uptake (number of referrals that attend at least one exercise session)		
Adherence (number of referrals that attend exit assessment)		
Adherence (number of referrals that attend an agreed number of sessions)		
Attendance (number of attendances in a defined period)		
3i Measures of change	Tick if recorded	Define time points
Change in physiological measures (BP, weight, BMI etc.)		
Change in PA behaviour (define measure)		
Change in wellbeing (define measure)		
Other (define)		