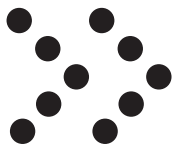


appendices

FOR

getting australia active II



An update of evidence on physical activity

August 2004

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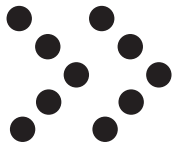
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Appendix 1

Populations



❖ APPENDIX 1A

CHILDREN AND ADOLESCENTS: MULTIPLE SETTINGS

Dr Anna Timperio

Literature search method

A literature search was undertaken using the following key words/strategies in 'PubMed' and 'Psychinfo' databases:

- i. (children OR adolescence) AND (physical activity OR exercise) AND (intervention* OR randomi*)
- ii. (childhood OR adolescence) AND (physical activity OR exercise) AND (intervention* OR randomi*)

The titles and abstracts of articles identified were checked for relevance by the author, and the reference lists of relevant articles were also examined. In addition, the authors' own Endnote libraries were searched for any additional relevant articles. The searches were limited to intervention studies published since 1999.

Children and adolescents: multiple settings

This review includes out-of-school or multi-setting intervention studies with children and adolescents. Children were defined as approximately 0–12 years. Adolescents were defined as 13–18 years. Interventions delivered solely through schools are reviewed in Appendix 2A.

In total, nine interventions were reviewed that aimed to promote physical activity among children (Table 1A.1). These studies were predominantly based in the USA. Only two interventions targeted children younger than 5 years. The primary focus of four of the five interventions was weight gain prevention, and therefore these interventions also focused on food-related issues (in most of these cases, food-related issues appeared to dominate the intervention). Four of the interventions involved after-school or summer day camp programs and

seven interventions included a component that involved parents or families. One study was initiated in a primary care setting. Most of the intervention studies included in the review had small sample sizes or were pilot studies. The larger, more intense interventions showed mixed success. For example, the intensive multi-strategy intervention reported by Pate et al. (2003) had low attendance and no change in physical activity was observed. In contrast, a comprehensive school and family program implemented through schools in Crete resulted in increases in moderate to vigorous physical activity after three and six years. This was the only study reviewed to include long-term follow-up. No intervention that included a summer program or intensive after-school program resulted in increased physical activity among children. Two of the interventions aimed to decrease time spent watching television and both resulted in decreased viewing time. Overall, only five of the nine studies resulted in increased physical activity or decreased sedentary behaviour. Intervention studies currently in progress include the Hip-Hop to Health, Jr program, focusing on pre-school classes for 3–5 year-old children and parental education and role modelling and support (Fitzgibbon et al. 2002; Stolley et al. 2003), and the Pathways family intervention with third-grade American Indian children (Teufel et al. 1999).

Five intervention studies were found that aimed to promote physical activity among adolescents (Table 1A.2). Each of these studies was based in the USA and generally included small sample sizes. Further, physical activity was not the primary focus of three of the five interventions. These interventions ranged from primary care initiated to home and community interventions. Of the five interventions, only two resulted in improvements in physical activity in the short-term. Patrick et al. (2001) showed increases in moderate-intensity physical activity after computerised screening and goal setting immediately followed by targeted GP counselling. However, as that study did not employ a control group for this component of the intervention, it is unknown whether the increase in physical activity was due to the intervention or other factors. The other intervention to show a positive effect included exercise programs offered to mother and daughter pairs, highlighting the importance of family support for physical activity (Ransdell et al. 2003).

Critical issues identified in this literature include:

- lack of published studies including Australian children;
- most studies based on pilot intervention and small sample sizes;
- most studies relied on self-report measures of physical activity (may not be sensitive enough to detect changes in physical activity) and several used varied data collection modes to collect self-reported physical activity data;
- limited studies including long-term follow-up;
- many studies did not focus on physical activity as the main intervention target – for these interventions it is not known if equal emphasis was given to physical activity and other health issues;
- many studies were limited to overweight children or adolescents (these tended to be those concerned mainly with prevention of weight gain).

Priority research needs in this area include:

- studies of Australian children
- studies incorporating objective measures of physical activity;
- studies with long-term follow-up to investigate maintenance of behaviour change.

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Table 1A.1 Features and effects of studies that promoted physical activity in children

Study*	Setting	Activity target (implied or explicit)	Describe the intervention	Sample	Research design	Follow-up	Outcome measures	Other measures	Effects	Comments
Harvey-Berino & Rourke	Homes (USA & Canada)	Increased exercise behaviours (Main focus: obesity prevention)	16 wk home-based intervention 1. Parenting support: core parenting program. 2. Obesity prevention & parental support: parenting program with exclusive focus on skills for developing eating & exercise behaviours.	43 Native-American Mother-child pairs. Mean age of mothers: 26.5y, all overweight. Mean age of children: 21 mths (54% males). Low SES	RCT: parenting support vs parenting support and obesity prevention	Pre-post intervention	Accelerometer	Anthropometry Diet Feeding style Outcome expectations Self-efficacy Intention Diet exposure & regulation	No change or difference between groups	Small sample size. Likely that greater attention was given to dietary aspects of intervention.
Pate et al. 2003	2 rural communities in Sth Carolina (US)	After-school hours PA	Active Winners – multistrategy (18 mth) 1. Intensive summer & after school PA program 2. Newsletters for families 3. Formation of committees to improve school environment 4. Community: newspaper articles & PA at local events	5th grade public school students (mostly African American). 49% boys. Mean age at baseline = 11yr n=436	Quasi-experimental: intervention: vs control community	Pre, mid and post-intervention All measures taken in Spring	Self-complete survey: Previous Day Physical Activity Recall (valid & reliable) on three consecutive days No. daily 30-minute blocks where main activity was vigorous or moderate.	Self-efficacy Outcome expectations Social influences Intention	None	<ul style="list-style-type: none"> Extremely resource intensive for low exposure in intervention community: 82% with Process evaluation: difficulty recruiting & training staff and peer leaders. Components 2, 3 & 4 not well implemented. Summer & after-school programs may be culturally acceptable in Australia
Manios et al. 1999; 2002	Primary schools, Crete (Greece)	Fitness Supportive environment for PA at school & at home	National Health & Nutrition Education Program (6 years): School health/nutrition education (13–17h/yr); PE (2 x 45 min/wk in playground) & classroom sessions delivered by PE instructors (4–6h/yr). 3–5 workbook exercises completed with parents/yr. Parental meetings: education & modelling behaviour	1st grade students 3-yr follow-up: Intervention group = 288; Control group = 183	RCT Intervention group: 24 schools across two counties; Control group: 16 schools in one other county.	3 & 6 years post baseline	Physical fitness indices Proxy reported leisure-time PA (duration of various activities – reliable/valid)	Health knowledge Anthropometrics Biochemical measures Diet	Greater increases in MVPA, standing broad jump, sit-ups in intervention group after at 3y. Greater increases in MVPA & endurance run test in intervention group after 6y.	Comprehensive, sustainable program. Potentially replicable in Australia, however likely to be teacher/staff-intensive.

Table 1A.1 Features and effects of studies that promoted physical activity in children (cont.)

Study*	Setting	Activity target (implied or explicit)	Describe the intervention	Sample	Research design	Follow-up	Outcome measures	Other measures	Effects	Comments
Baranowski et al. 2003 (SCT)	Day camp & home settings, Houston, USA.	Increase MPPA to 60 min/day (Main focus: weight gain prevention)	Fun, Food & Fitness Project (FFFP) – Baylor GEMS pilot study(12 wks): 4 wk Summer Day Camp, then separate 8wk internet interventions for girls and for parents (weekly). (social support buddies, parental modelling, PA skills & exposure, self-monitoring with pedometers)	8 y/o African-American girls and a parent. Must have BMI \geq 50th percentile & have internet access Intervention group: n=19 (mean BMI = 21.1); control group: n=16 (mean BMI = 26.3).	2-arm RCT: Control group received generic Day Camp & internet intervention (once/wk)	Pre-post intervention (BMI only). 4 wks post intervention (all measures)	Accelerometry Computerised self-report survey (GEMS Activity Questionnaire – adapted from a reliable/valid tool).	Anthropometry Diet Dietary preference Physical maturation	No differences between groups.	<ul style="list-style-type: none"> Small sample. Low log-on rates for internet intervention; low rates of attendance at Summer Camp for control group due to flooding. Timing of measurements means it is unknown whether the summer camp improved PA, or if PA dropped off during internet phase or after the intervention. Summer & after-school programs perhaps not culturally acceptable in Australia
* Beech et al. 2003	Community centres, USA	Weight gain prevention	Memphis GEMS Pilot Study (12wk) Intervention 1: interactive weekly group sessions with girls; Intervention 2: interactive weekly group sessions with parents. (knowledge & behaviour change skills)	60 African-American girls (8–10 yrs) & their parents. BMI \geq 25th percentile.	3-arm RCT: adolescent sessions vs parental sessions vs control.	??	Accelerometer	Sweetened beverages Water intake Anthropometry	M-V PA increased by 12% in both active intervention groups	
* Robinson et al. 2003	Community, Low-income neighbourhoods, USA	Reduce TV Increase after-school PA (Main focus: weight gain prevention)	Stanford GEMS pilot study (12wk) After-school dance classes at community centres 5-lesson intervention in homes to reduce SB	61 8–10y/o African American girls & their parents Low income neighbourhoods	2-arm RCT (Control = newsletters & health education lectures)	??	Accelerometry Self-reported media use	Anthropometry Meals eaten with TV	Reduced household TV viewing & trend toward increased after-school PA in intervention group.	Lack transport identified as barrier to participation in dance classes.
* Story et al. 2003	Community & homes/family, USA	Weight gain prevention	Minnesota GEMS pilot study (12 wk): After-school intervention 2/wk for 12wks Family component??	54 8–10 y/o African-American girls & their parents	2-arm RCT (Control = unrelated program)	12 weeks (immediately post-intervento??)	Accelerometry Self-reported media use	Anthropometry Diet Psychosocial variables	Differences in hypothesised direction ????	

Table 1A.1 Features and effects of studies that promoted physical activity in children (cont.)

Study*	Setting	Activity target (implied or explicit)	Describe the intervention	Sample	Research design	Follow-up	Outcome measures	Other measures	Effects	Comments
Rowland et al. 2003	Inner-London, UK	Active transport to school	1yr intervention: 16 hr of expert assistance from a school travel coordinator to develop & implement Travel Plans.	41 Primary Schools, Children in Years 2 & 5.	Cluster RCT	Pre and 2 mth post-intervention	Parental proxy-report of whether child walked, cycled or used public transport to commute to school that day.	Parental concern re safety	Production of travel plans increased, but no effect on travel patterns or parental safety concerns.	Few schools willing to participate. Travel plan implementation required urban planning activity. Potentially replicable in Australia – may need to be partnered by planning departments
Ford et al. 2002 (SCT)	Primary care, urban setting (Atlanta), USA	Reduce TV	Counseling by primary care provider (5–10 mins) OR behavioural intervention (15–20 min discussion on budgeting TV times, brochure for parents for support/assistance & electronic TV time manager)	28 families of African-American children aged 7–12yr (low income). Mean age = 9.5–9.6yr, 54% female	RCT (counseling alone vs counseling plus behavioural intervention)	Pre-post intervention (4 week intervention)	Self-complete survey or telephone interview: TV, videotape & video game use; time spent in organised activity & playing outside	Household TV use Meals eaten in front of TV	Decreased TV, videotape & video game use (magnitude of change similar for both groups). Increase in organised sport for behavioural group	Small pilot project with encouraging results. True control group not used. Accuracy of self-report PA may be low for this age group. Different modes of data collection – are data comparable? Replicable in Australia.

* To be updated – based on abstract only (full-text articles on order)

Table 1A.2 Features and effects of studies that promoted physical activity in adolescents

Study*	Setting	Activity target	Describe the Intervention	Sample	Research design	Follow-up	Outcome measures	Other measures	Effects	Comments
Resnikow et al. 2000	Community space, inner-city, USA	Increase PA; Decrease TV viewing (Main focus: weight gain prevention)	Go Girls! (2 years) – 3 components 1. Interactive education/behavioural sessions focussed on food of Caltrac to illustrate PA benefits) 3. Food preparation	57 overweight African-American adolescent girls recruited from public housing developments. Mean age = 13.5yr	Comparison between high and low attenders	Immediately following first 6 mth period	1. 1 week recall of PA 2. PA preferences 3. Frequency of behaviours in past week	Self-efficacy Outcome expectations Weight/food preoccupation Diet Emotional eating Knowledge Anthropometrics HDL, BP, Fitness	No significant differences between high and low attenders	Main focus on food. Small sample and low attendance (average = 43%). Arbitrary groupings of low & high attenders (<1/2 vs >1/2 sessions), no control group. Sensitivity of measures? Replicable in Australia
Patrick et al. 2001	Health Care Clinics, USA	MPA VPA (multiple behavioural targets)	PACE+ (4 mth) Computerised screening & goal setting, then counselling from health care provider followed by one of 4 types of extended intervention: 1. No contact 2. Frequent mail 3. Infrequent mail & telephone 4. Frequent mail & telephone	N=117, age 11–18 (mean age 14.1y) yr recruited from pediatric & adolescent outpatient clinics	Quasi-experimental	Pre-post intervention	Baseline: computerised; Follow-up: telephone interview No. 20 min sessions VPA No. 30 min sessions MPA (reliable/valid)	Diet Program satisfaction	Diet Program satisfaction	No control group for minimum intervention – unknown if changes due to initial screening or other factors; High baseline VPA – no changes detected. Different modes of data collection pre & post intervention. Unknown if mailed materials read. Target behaviours for intervention not randomly selected (based on SOC – individual 'ready to change). Potentially replicable in Aust
Saelens et al. 2002	Primary care (Southern California), USA	Increased PA (Main focus: weight control)	Healthy Habits intervention. Computer program adapted from PACE+ to generate PA plans & tailored physician counselling; 2 wk later: telephone counselling (14–16 wk) & manual of behavioural skills; Parents received information sheets. Typical care: computer program adapted from PACE+ to generate PA plans & non-tailored physician counselling	N=39; mean age 14.2y, 59% boys, 20–100% above median BMI for sex & age.	2-arm RCT (Healthy Habits vs Typical Care).	Baseline and 3-mth post-intervention	Interviewer-administered 7-Day Physical Activity Recall (7-Day PAR) PA-related energy expenditure Self-reported sedentary behaviour over last 7 days	Anthropometrics Diet Weight-related behaviours Problem eating Use of behavioural skills	No difference in PA behaviours	Self-reported outcome measures – may not be sensitive enough to detect changes (favourable were observed). Focus on self-monitoring may have increased reporting accuracy post-intervention. Potentially replicable in Australia.

Table 1A.2 Features and effects of studies that promoted physical activity in adolescents (cont.)

Study*	Setting	Activity target	Describe the Intervention	Sample	Research design	Follow-up	Outcome measures	Other measures	Effects	Comments
* Ransdell et al. 2003	Home vs community, USA	PA Health-related fitness	Mother & daughter interventions Community-based (CB): 3 instructor led sessions/week x 12 wk at University fitness facility Home-based (HB): 3 sessions/week x 12 wk exercise in or near home	Mothers (mean age 45.2y) & daughters (mean age 15.4y). CB = 20, HB = 14.	Experimental (Community-based intervention vs home-based intervention)	Pre-post intervention	PA??? Health-related fitness??		Both groups increased participation in aerobic, muscular strength & flexibility activities. Daughters improved muscular strength, endurance, flexibility & aerobic capacity – both groups.	Mother-daughter interventions have potential. Replicable in Australian context
* Wilson et al. 2002	USA		12 wks Intervention 1: social cognitive theory (SCT) & motivational intervention (with a strategic self-presentation video session). Intervention 2: SCT only. Intervention 3: Education only	55 healthy African-American adolescents	3-arm RCT	Post-intervention	Activity monitor	Diet Self-concept Self-efficacy	No significant change in PA for any of the groups.	No true control group

* Summary based on information available in abstract only

❖ APPENDIX 1B

YOUNG ADULTS

Dr Kylie Ball

Literature search method

A literature search was undertaken using the following key words/strategies in 'PubMed' and 'Psychinfo' databases:

- b. (young adults OR young men OR young women) AND (physical activity OR exercise) AND (intervention* OR random*)
- c. (tertiary OR university) AND (physical activity OR exercise) AND (intervention* OR random*)

The titles and abstracts of articles identified were checked for relevance by one author, and the reference lists of relevant articles were also examined. In addition, the authors' own Endnote libraries were searched for any additional relevant articles.

On the whole, few physical activity intervention studies have been conducted with young adults (generally defined as being aged approximately 18 to 30 years) as the specific target group. This is unfortunate, since epidemiological data suggest that young adulthood represents a life stage characterised by substantial declines in physical activity levels (Caspersen, Pereira & Curran, 2000; Telama & Yang, 2000).

A review of the scientific literature using the search strategies outlined above revealed only three published intervention studies specifically targeting young adults, and one intervention study targeting mothers of young children, many of whom were aged in their twenties and early thirties. Methods and results of these studies are outlined in Table 1B.1. A further study in progress, "Moms on the Move" (Fahrenwald & Sharma, 2002), also targets mothers of young children, but efficacy result of the study and not yet published.

The four studies reviewed below show mixed results. Two studies (Miller et al., 2002; Woods

et al., 2002) revealed modest short-term results, with intervention participants demonstrating either increased physical activity stage of change, or a higher likelihood of being adequately physically active after the intervention compared with control participants. However, the longer-term effectiveness of these two interventions was either not studied (Woods et al., 2002), or revealed that improvements were not maintained (Miller et al., 2002). In addition, the other two studies reviewed (Cardinal et al., 2002; Xiangyang et al., 2003) showed no effect of the intervention on increasing participants' physical activity, and in one case a decrease was actually observed (Xiangyang et al., 2003).

Effective intervention appears necessary to prevent the declines the physical activity typically observed during young adulthood. However, this review highlights that further research is necessary to identify how best to intervene with this population group.

Critical issues identified in this literature include:

- the lack of published intervention studies with young adults generally (only four studies identified over a three-year period)
- all of the studies relied on self-report measures of physical activity
- the available studies provided limited or no data on maintenance of behaviour change over longer follow-up periods
- 3 of the 4 studies were university-based, and the reach/relevance to other groups, particularly low SES groups, is unknown

Priority research needs in this area include:

- the need for further evaluations of a variety of intervention strategies with this target group in general, since published intervention studies in this area are limited, and show only modest effectiveness at best
- studies incorporating objective measures of physical activity
- studies with long-term follow-ups to investigate maintenance of behaviour change

- studies based in settings other than universities
- additional studies with particularly high risk groups, including young mothers and young adults of low SES

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Table 1B.1 Features and effects of studies that promoted physical activity in worksite settings

Study	Setting	Activity target (implied or explicit)	Describe the Intervention	Sample	Research design	Follow-up	Outcome measures	Other measures	Effects	Comments
Woods C, Mutrie N, Scott M, 2002	University; urban area in Scotland	Recreational PA	Print-based (two mail out packages, two months apart); based on Trans-theoretical model	N= 460 undergraduate students, initially sedentary; mean age 19y; 62% female	Randomised trial (print versus none)	Pre-post data collection, baseline-7 months	Self report written questionnaire-PA stage of change (SOC)	Processes of change	Significantly more of intervention participants than control improved their SOC	Strengths: strong theoretical basis; minimal, low-cost intervention Weaknesses: Postintervention data only available on 49% of sample; self report; no longer term maintenance data. Potentially replicable
Miller YD, Trost SG, Brown WJ, 2002	Community-based, through preschools and childcare centres in Newcastle, Australia (metropolitan)	LTPA	Print-based (one booklet on overcoming barriers), discussion and community support strategies	N=554 mothers of young children, mean age = 33y, from range of SES backgrounds	Randomised trial, control (Group 1 – survey only) versus print (Group 2) versus print plus community strategies (Group 3)	Pre-post data collection, baseline – 8 weeks then 5 months follow-up	Self report 7-Day recall questionnaire – meeting current PA guidelines	Partner social support; self-efficacy	Group 3: significantly more likely to meet PA guidelines than control group at 8 weeks but not 5 months; Group 2 no effects	Strengths: large n, range of SES, incorporate community context. Weaknesses: minimal print information; short-term modest effects one group only and not maintained.
Cardinal BJ, Jacques KM, Levy SS, 2002	Public US University; metropolitan	LTPA	10-week, 30-year university-required course, lecture and lab based delivery	N=540 students enrolled in health or psychology courses	Quasi-experimental, current lecture/lab based course vs prior lecture/lab course vs psychology course	Pre-post data collection, baseline-10wks	Self report weekly recall of LTPA	Stage of Change (SOC)	Little effects on either LTPA or SOC	Strengths: Theoretically based; Weaknesses: Not randomised; solely information based; no follow-up. Potentially replicable but minimal effectiveness
Xiangyang T, Lan Z, Zueping M, Tao Z, Yuzhen S, Jagusztyn M, 2003	Six Universities in Beijing, China; metropolitan	LTPA	Health Promoting Universities within Ottawa Charter framework; addressed broad range behaviours including PA; included policy making, staff training, lectures, print- and web-based information, preventive consultations, 'exercise day', phone lines etc.	All students targeted; 2360 and 2347 students selected via stratified random sampling completed evaluation (ie two different samples)	Whole of community approach	Pre-post data collection, baseline-3 years (DIFFERENT SAMPLES)	Self reported PA, 3 times/week or more in past six months	Various other health behaviours also targeted in the intervention (diet, smoking, safe sex etc)	Significant DECREASE in proportion physically active (29% baseline, 23% follow-up)	Strengths: comprehensive, multiple strategy approach Weaknesses: intensive/costly; Seasonal effects not accounted for – may explain decrease in PA Potentially replicable but highly labour-intensive and costly for no observed effect

APPENDIX 1C

OLDER PEOPLE: MULTIPLE SETTINGS

Dr Gary Moorhead

Literature search method

A literature search was undertaken using Medline. The search targeted physical activity intervention studies published since 1998 using combinations of the following key words: older, exercise, physical activity, intervention. Once a list had been established, the abstracts were examined for relevance and the references for other possible studies of interest.

Interventions

Thirteen interventions were reviewed, and of these eleven were randomised control trials. Seven were based in the USA, two in the UK, two in Australia and one in Belgium. Settings ranged from nursing homes and retirement villages to general practice, health and senior citizens centres to city and even one nation-wide study. The studies targeted a range of outcomes from a simple increase in walking, attainment of the ACSM guidelines of 30 minutes of moderate intensity physical activity on most days through to increases in muscle strength. Sample sizes ranged from three with less than 50 participants to one with more than 20,000. Nine of the studies had between 100 and 900 participants. All but two were randomised controlled trials. Duration ranged from 6 weeks to ten years and on-going. Most (nine) were for 12 months.

Interventions ranged from generalised or individually tailored physical activity advice delivered either by a counsellor or mediated communication mechanism through to exercise and strength and conditioning classes. The most commonly used interventions were variations on individually tailored physical activity advice.

Outcomes

Most of the interventions recorded some degree of success. Those with the most negative outcomes were two of the studies with small numbers of subjects (20 and 26) and one where it could be argued that those selected were most likely drawn from a cohort of the population with pre-existing high levels of activity.

The best outcomes were obtained by interventions with higher levels of contact complemented by multiple reinforcements of the physical activity message. For example, studies with concurrent use of classes and exercise counselling, or walking groups with visits by a nurse practitioner, or individual counselling with monthly group meetings, were most successful.

Table 1C.1 Features and effects of studies that promoted physical activity in older people

Study	Setting	Activity target	Research design	Describe the Intervention	Sample	Follow-up	Outcome measures	Other measures	Effects	Comments
Brassington et al., 2002	Sunnyvale, California, USA	Exercise adherence	Randomised clinical trial	Two exercise programs: mod. Intensity endurance and strengthening exercises (Fit & Firm); or, stretching and flexibility exercises (Stretch & Flex) Following randomisation, participants received exercise prescription and telephone counselling to promote exercise adherence for 12 months.	N=103 (67 women, 36 men) Mean age=70 White (95%) well-educated	6 and 12 month assessment visits.	The Self Efficacy for Exercise Questionnaire and the Social Support for Exercise Behaviour Questionnaire	Weekly exercise logs	Exercise adherence across 12 months high in both groups (80%)	"success breeds success" Long term exercise adherence is enhanced by perceived improvement in fitness-related variables, such as weight and energy.
DeForche et al., 2000	Three senior citizens centres, Belgium.	Enhance attendance of older adults in physical activities	Post test only of existing group	One group currently in organised exercise classes and the other not. Intervention was a questionnaire to determine activity levels, support and barriers	Intervention N=75 Control N=75 Age 55 to 80 years mean=64	None	Responses to questionnaire regarding social support, subject norm, barriers, and benefits of physical activity – past, present and future	Perception of health comparative to peers.	Exercising in a group program gives the opportunity to accumulate some extra physical activity in and outside the program.	Encouraging older people to exercise in a group produces more benefits.
Evans et al., 1999 (ABSTRACT ONLY)	Nursing home	Increase strength, muscle size, energy and endurance.	RCT	High-intensity, strength-training program	N=100				Significant gains in strength and functional status Significant increase in spontaneous activity (No change in the control)	Potential for application in Australian settings, plus directly applicable and useful guidelines for minimal activation without need for medical screening
Halbert et al., 2000	General Practice, Adelaide, South Australia	Moderate &/or vigorous exercise, 20 minutes 3 times a week	Randomised controlled trial (Intervention N=149; Control N=150)	Both groups: Individualised physical activity advice by an exercise specialist in general practice (20 min session). Intervention: advice re benefits of pa, plus pamphlet with pa plan Control: pamphlet promoting good nutrition and discussion	N=299 Aged 60 years or more Mean age = 67.3 years.	Data collected at 3, 6 and 12 months	Changes in physical activity, selected CV risk factors and quality of life over 12 months measured after 12 months by questionnaire and measurement	Energy expenditure for some (Intervention N=31; control N=28) using accelerometer.	Sustained increase in self-reported physical activity in both groups. No changes in CV risk factors and minimal changes in quality of life measures.	Providing regular pa advice results in increased pa maintained over 12 months
Halbert et al., 2001	General Practice, Adelaide, South Australia	Moderate &/or vigorous exercise, 20 minutes 3 times a week	Randomised control trial Osteoarthritis sub-group N=69 Intervention=37 (M=13) Control=32 (M=15)	Individualised physical activity advice from an exercise physiologist at baseline, 3 and six months.	N=299 Aged 60 years or more	11 page questionnaire at baseline and 3, 6 and 12 months	Self-reported frequency of walking, minutes of walking per session, frequency of vigorous exercise per week, minutes of vigorous exercise per session.	Self-reported symptoms of OA. Resting heart rate, BP, height, mass, blood lipids. Both knees in OA group examined.	No intervention-control group differences, but intention to exercise did appear to be positively influenced.	Study recommends concentrating efforts on identifying sedentary patients interested in becoming active.

Table 1C.1 Features and effects of studies that promoted physical activity in older people (cont.)

Study	Setting	Activity target	Research design	Describe the Intervention	Sample	Follow-up	Outcome measures	Other measures	Effects	Comments
Harland et al., 1999	Urban General Practice in SE disadvantaged area, Newcastle, UK	Moderate and vigorous activity	Randomised control trial. Four intervention groups and one control group	Motivational interviewing: brief (one) or intensive (six) with or without vouchers for gym attendance	N= 523 Adults 40–64 years. Men= 217 women= 306	12 weeks and one year.	Physical activity score; sessions of moderate and vigorous activity in the preceding four weeks.		More participants in the intervention reported increased pa and vigorous pa, but few differences btw the diff interventions and short term increases were not sustained.	Pessimistic conclusion re value of any short term interventions without other incentives to change long term behaviour
Koffman et al., 2001	The whole USA .	Increasing pa, improving nutrition and knowledge of heart disease and stroke	Non-randomised, no control.	12 week educational intervention: manual with weekly info about how to manage cv risk factors and build a daily routine of increased pa by creative and practical ways.	Women. N=23171 (aged 25 and older; 36% 35–54)	Postcards, emails and a newsletter.	Self-reported questionnaires Baseline info collected at registration, bi-weekly follow-up evaluation summary cards and evaluation at 12 weeks.	Other statistical bias checks were used. Eg. McNemar test for matched pairs	No. reporting 30 mins 5 times a week increased from 32% to 67%.	Claimed as an "important model for . . . pop-based, targeted low-cost self-help programs." But limitations note that benefits may have overestimated benefits. potential for replication in Australia.
Norris et al., 2000	Primary care in north west USA	Moderate &/or vigorous activity	Randomised controlled trial	Two intervention groups. Group one: counselling and exercise prescription plus written pa info and a reinforcement call at 4 weeks. Group two: three booster phone calls and four postcard reminders	N=812 aged 30 or older. Equal nos of M&F; highly educated (80%+ with some college education)	Pre-post; baseline, six months.	Self-completed surveys	Washburn's Physical Activity Scale for the Elderly. Also self-efficacy, social support and perceived barriers and benefits.	No significant changes in p.a.	Claim this proves such an intervention does NOT increase pa; however, have to question degree to which study selected those who were already at likely maximum pa levels.
Pereria et al., 1998	Pittsburgh, USA	Walking	Ten year follow-up of RCT		N=196 (Int 96; Control 100) Post-menopausal women. 50–65 years at start of intervention	Study is the follow-up at 10 years.	Telephone interview about self-reported walking and other activity.	Functional status; chronic diseases and conditions	Median values for walking for intervention significantly higher than control. Also fewer hospitalisations, surgeries and falls.	Demonstrates long term compliance in older women to original trial and suggests may also have been other health benefits. Need to look at replication in Australia.

Table 1C.1 Features and effects of studies that promoted physical activity in older people (cont.)

Study	Setting	Activity target	Research design	Describe the Intervention	Sample	Follow-up	Outcome measures	Other measures	Effects	Comments
Reger, et al., 2002	City of Wheeling, West Virginia, USA	Walking	RCT	Communication intervention over two month period using paid media, public relations and health activities.	Intervention N=719 Comparison N=753 Age 50-65	On-going throughout campaign "communication cascade"	Self-reported behaviour from a probability sample survey (telephone)	Direct observations of behaviour by trained observers	Observation data showed 23% increase in walking for intervention and none in comparison. Baseline sedentary: 32% met 30 mins per day; only 18% in the comparison	Many similarities to the Rocky approach and would seem to be very applicable to Australia.
Resnick 2002	Continuing Care Retirement Community Maryland, USA.	Walking, exercise	Randomised controlled trial.	WALC (Walk 20 mins x 3 per week – with walking group or individually, Address pain, fear, fatigue – 1x4 weekly then 1xmonthly visit by geriatric nurse practitioner (GNP) to address these issues; Learn about exercise and verbal encouragement – exercise book, reviewed with participant 1x4 weekly, then 1xmonthly by GNP, periodic goals negotiated and publicly displayed; Cueing, monthly calendar – with negotiated exercise schedule to fit individual daily schedules.	N=17 (Women) Mean age =88 Intervention=10 Control=7	Weekly first 4 weeks then monthly next five months with GNP. Follow-up testing 2 and 6 months	Higher self-efficacy and outcome expectations related to exercise, increased exercise and free living activity.	Better physical and mental health status and fewer falls and injuries	Intervention group increased self-efficacy and outcome expectations, exercise behaviour and overall activity. No change in other measures.	Despite limitations of small sample size and self-report, WALC would seem to have potential for application in Australian aged care facilities and aged care staff training.
Samaras et al., 1997	Sydney, Australia	Physical activity, glycaemic control, parameters of CV risk.	RCT	Very intensive. Six month focus group tailored and structured exercise (precede-proceed model) and support program. Exercise program at Leisure centre with trained staff and support included education handouts, exercise videos, activity meters (pedometers?) and log books.	N=26 (men=10; women= 16) Mean age=60 Intervention = 4=M, 9=F; Control 6=M, 7=F	6 months (following completion) and 12 months	Activity levels assessed using standardised questionnaire with an investigator	Physiological change (BMI, blood tests etc), diet, well-being	No significant change in activity in either group. Some other benefits (reduced BMI, weight and fasting glucose and insulin observed in some subjects	Older people with diabetes are harder to motivate to exercise. May be issues stemming from the condition that contribute.
Sims et al., 1999	General Practice (suburban 8 partner), UK	Increase moderate physical activity to 5x30 minute sessions per week	Intervention and control with random allocation	Motivational interview by a practice nurse to develop an individualised schedule. Follow-up at 2 and 6 weeks.	N=20 (M=13, F=7) Mean age 72.2	Phone call at 2 and 6 weeks	Revised Godin and Shepard form for current leisure time activity levels. Activity levels via ambulatory heart-rate monitoring 8 hours per day over 3 days.	GHO-28, Dartmouth COOP scales, Tokyo Social competence Index and SF16 used to measure mental physical and social health.	Self-report of higher levels of moderate p.a. Not confirmed by heart-rate data.	Number of possible contaminants of data and small numbers in pilot mean little useful information.

Table 1C.1 Features and effects of studies that promoted physical activity in older people (cont.)

Study	Setting	Activity target	Research design	Describe the Intervention	Sample	Follow-up	Outcome measures	Other measures	Effects	Comments
Stewart et al., 2001	Multi-specialty group practice, USA	30 minutes of moderate intensity activity most days of the week	Randomised controlled trial Intervention N=81 Control N=83	CHAMPS II A lifestyle program based on the personal choice model that promotes increased physical activity levels. Target – 30 minutes of moderate intensity activity on most days. Trained staff assisted participants to develop and maintain a regimen for life.	N=173 Age 65 to 90 Mean=74 34% male 66% female N=164 (95%) completed the trial.	Monthly group workshops, physical activity diaries, regular staff-initiated phone calls from a counselor, monthly newsletters and functional fitness assessment.	Self report Estimated calories expended weekly in at least moderate intensity exercise. Estimated caloric expenditure in exercise-related physical activities of all intensities.		Meaningful pa increases: intervention group increased estimated caloric expenditure by 487 calories/week (moderate) and 67 calories in physical activities of any other intensity. Negligible change to control group.	Tailored programs may be useful for increasing pa in older Australians.

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APPENDIX 1D

ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE AND COMMUNITIES

Trevor Shilton

To date there are few published intervention studies that demonstrate effectiveness of community programs that increase physical activity levels among Aboriginal and Torres Strait Islander (ATSI) people. Indeed, there is a limited literature base describing the role of physical activity in reducing chronic and other diseases among Aboriginal and Torres Strait Islander (ATSI) communities. Nevertheless the epidemiological rationale for a focus on physical activity to help increase length and quality of life, reduce chronic disease, improve general health and ameliorate other risk factors for chronic disease is compelling. Due to the nature of the available evidence, this section is not a review, but rather:

- (a) a 'statement of importance' relating to the potential of physical activity in health promotion and disease prevention for ATSI people; and
- (b) a call to action to implement and evaluate more community interventions that can be researched and evaluated to add to knowledge of what works in raising levels of physical activity in ATSI communities.

In addition, several ATSI research projects and interventions identified from the grey literature are described.

Statement of importance

Chronic disease prevention

While the Australian population as a whole continues to enjoy good health, ATSI people suffer higher rates of disease and injury. Life expectancy at birth for ATSI Australians is estimated at 56 years for males and 63 years for females – some 20 years worse than that for non-Aboriginals (ABS, 2001). Chronic diseases including Type 2 diabetes and

coronary heart disease are the leading causes of death among ATSI people, and these diseases are more prevalent at a younger age in ATSI adults (ABS, 2003).

Co-morbidity

ATSI people suffer complex co-morbidities from chronic diseases such as coronary heart disease, renal disease and Type 2 diabetes, as well as from depression and other mental health problems. Physical inactivity is a risk factor for many of these diseases, and being active can ameliorate risk from other risk factors such as hypertension, low HDL cholesterol, High LDL cholesterol, high triglyceride, glucose intolerance and overweight and obesity (ABS, 2003). Aboriginal people in all adult age groups are more likely to be classified as obese as non-Aboriginal Australians in the same age groups (ABS, 2001). ATSI people are also more likely to suffer more than one of these risk factors in combination.

Mental and psycho-social health

Psychosocial risk factors have recently been recognised by the National Heart Foundation as significant contributors to coronary heart disease (CHD). Depression, social isolation and lack of quality social support were assessed by the NHFA as being of similar order of importance to established risk factors (hypertension, smoking and high blood cholesterol) in their contribution to CHD (Bunker et al, 2003).

Cultural connection with activity

There are important linkages between ATSI culture and physical activity. The cultural connection of ATSI people with their land provides numerous opportunities for physical activity programs. Some Aboriginal health programs use linkage with culture in their methodology.

ATSI people have endured significant psychosocial stresses as a consequence of a myriad of social problems including dispossession, separation from family and culture, unemployment, economic hardship and associated deprivation and lack of self-determination. There is an important potential

role for physical activity programs in making a contribution to reducing depression, increasing social support and cultural pride, and reducing social isolation in ATSI communities.

A number of Aboriginal programs, especially those targeting youth, have been developed with objectives that include building pride, cultural identity and self-esteem – incorporating both a mental health and physical health dimension in their design. For example, a men's health program uses cultural activities such as hunting, fishing and dance as ways to promote health and cultural pride. Other examples of programs are featured in Table 1D.1.

Call to action

Although there appears to have been an increase in the number and diversity programs that address physical inactivity in ATSI communities, there remain little published on program evaluation. There is an urgent need for an increase in the number of well-designed physical activity programs, with appropriate program evaluation and research to enable their results to be of benefit to other ATSI communities.

A number of programs underway around Australia are described in Table 1D.1. These programs span education, health, sport and recreation and local community sectors. No cross-community approaches are documented and such interventions are needed to present physical activity in the context of holistic community health.

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Table 1D.1

Setting or population	Program title	Program's key features	Evaluation	Other comments, resources, outcomes
Health (Queensland)	Healthy Weight Program	<ul style="list-style-type: none"> The Healthy Weight Program is a weight and waist management and healthy lifestyle program Designed for Aboriginal and Torres Strait Islander adults. A series of workshops and individual assessments (screenings) Conducted by trained facilitators over 8 months 	<ul style="list-style-type: none"> Evaluation conducted in 1999 by interview with facilitators and analysis of screening data. Facilitators reported barriers such as lack of time to organise the program and lack of support from others. Screening results impressive. 62 of 91 participants lost weight, 64 lost centimetres from their waist and 65 lost centimetres from their hips. 	<p>Long term evaluation needs to be followed.</p> <p>Healthy Weight Program Evaluation Summary Report 1996–1999. www.health.qld.gov.au/ohs/Documents/iphun/9159dmp.htm</p>
Sport and Recreation, Australian Sports Commission. (Queensland/National)	Indigenous traditional games	<ul style="list-style-type: none"> A collection of traditional Aboriginal games and pastimes Provide the opportunity to learn about, appreciate and experience aspects of Aboriginal culture. Included in classroom lessons, outdoor education, and physical education. 	Well received in the Queensland school system	Developed in Queensland and made available in many Queensland schools. Made available as pdf files on the Australian Sports Commission website. http://www.activeaustralia.org/isp/traditional/htm
Health (Townsville)	Walkabout together	<ul style="list-style-type: none"> Townsville Comprehensive lifestyle intervention program Aims to influence clinical outcomes Prospective intervention study in overweight patients 24 months program Uses pedometer, nutrition counselling and physical activity, goal setting 	<ul style="list-style-type: none"> Prospective intervention study. Incomplete and unpublished. 	
Local communities Local Government Sport and Recreation	Swimming pools in local communities	<ul style="list-style-type: none"> Facility provides a community centre for social interaction Facility contributes to increasing physical activity Facility linked to other health outcomes, eg. Reduced skin infections Facility may be linked to other social outcomes, eg. 'no school no pool' policy reducing school truancy 	<ul style="list-style-type: none"> Evaluations unpublished 	
Education Sport (Western Australia)	Improving sport and physical education for Aboriginal students	<ul style="list-style-type: none"> Study of perceptions and experiences of sport for 11–12 year old Aboriginal students 	<ul style="list-style-type: none"> PHD thesis Unpublished Highlights the potential of School sport to impact on identity, social skills and sport competence 	-
Education Physical Education (western Australia)	The Swan Nyungar Sports Education program at Balga Senior High School	<ul style="list-style-type: none"> Focus on culture, sport and community ownership in a high school program Socioeconomically disadvantaged area of Perth Focus on football and netball 	<ul style="list-style-type: none"> Unpublished Improvements in literacy, attendance, retention and participation. 	
Health Local community (Western Australia)	Jigalong Aboriginal community controlled Lifestyle disease program	<ul style="list-style-type: none"> Accent on community control, design, ownership and sustainability 6 month program Physical activity component including ball games, walking and swimming. Other components include better food supplies, nutrition and food purchasing and cooking. 	<ul style="list-style-type: none"> Unpublished Preliminary indications of community members being more active and lowered risk of lifestyle disease. 	

Table 1D.1 (cont.)

Setting or population	Program title	Program's key features	Evaluation	Other comments, resources, outcomes
Sport Australian Sport Commission (ASC) (National)	Indigenous Sport Program	<p>Program's key features</p> <ul style="list-style-type: none"> • Aims to improve ATSI participation in sport and recreation with a specific community development focus. • Combines the resources ATSI and the ASC • The strategy first focused on young people • Now more broadly based. • Scholarships, mentoring programs, elite assistance, resources and 35 regional Indigenous Development Officers around Australia. 		<p>Other comments, resources, outcomes</p> <p>http://www.activeaustralia.org/isp/</p>