

Multimedia Appendix 2: Intervention characteristics

Study	Technologies	Key intervention features ^{a,b}
Walters et al 2010 [41]	Smartphone app + web + SMS	Motivational messages, goal-setting with HCP, counselling with HCP
Kharrazi et al 2011 [42]	Wireless pedometer + web	Interactive personal health record, social network, automated goal-setting, reward badges
Pellegrini et al 2012 [43]	Smartphone app	Group sessions, coaching calls, goal-setting for weight, diet and PA, monetary rewards
Jimenez Garcia et al 2013 [44]	Smartphone app	Visualised feedback and goal-setting, vibration prompts, mood diary
Geraedts et al 2014 [45]	Tablet	Exercise videos and telephone coaching
Recio-Rodriguez et al 2014 [46]	Smartphone app	Automated advice, additional manual input of PA
Clayton et al 2015 [47]	Wearable + web	Share activity profile with HCP, goal-setting with HCP
Cooper et al 2015 [48]	Wearable + wireless scales + web	Online detailed FB, goal-setting for weight loss, online virtual coaching
Granado-Font et al 2015 [49]	Smartphone app	Diet monitoring, Social network
Hurley et al 2015 [50]	Wearable + SMS	Adaptive or static goal-setting, immediate or delayed monetary incentives
Pellegrini et al 2015 [51]	Smartphone app	Diary, goal-setting for diet, exercise and sedentary time
Agboola et al 2016 [52]	Smartphone app + wearable	Tailored messaging, community feature for social support and comparison, goal-setting, educational library, portal for providers
Amorim et al 2016 [53]	Smartphone app + wearable	Face-to-face coaching with HCP, goal-setting with HCP, personalised messages
Duncan et al 2016 [54]	Smartphone app + wearable	Educational materials (guidelines, strategies to promote change in behaviour), goal setting with detailed visual feedback
Jones et al 2016 [55]	Smartphone app + wearable	Motivational messages and self-tracking of daily pain and mood
Ortiz et al 2016 [56]	Wearable	Feedback on PA
Shin et al 2016 [57]	Smartphone app + wearable	Feedback on PA, financial incentives
Taylor et al 2016[58]	Smartphone app	Feedback on PA
van Nassau et al 2016 [59]	Smartphone app + wearable + web	Feedback on PA and sedentary time, social networking, social game, face-to-face classroom discussions and graded group-based PA led by community coaches
Brickwood et al 2017 [60]	Smartphone app + wearable	Health tips and remote feedback from HCPs, telephone counselling
Ridgers et al 2017 [61]	Smartphone app + wearable + web	Interactive weekly individual and/or team missions or challenges, infographics, motivational videos and social

		forums
Wolk et al 2017 [62]	Wearable	Feedback on PA
Slootmaker et al 2005 [63, 64]	Wearable + web	Online exercise planning and goal-setting
Fujiki et al 2007 [65]	PDA	Scheduling, automated advice, forum, reminders
Hurling et al 2007 [66]	PDA	Avatar, competitive games, game status notifications
Polzien et al 2007 [67]	Wearable + web	Feedback on PA, calories and weight, online self-monitoring, Goal-setting with HCP
Consolvo et al 2008 [68]	Smartphone app	Mobile wallpaper supports continuous graphical feedback on PA, goal-setting, diary, manually edit detected PA
Faridi et al 2008 [69]	Wireless pedometer	Reminders, share data with HCP
Fujiki et al 2008 [70]	Pda	Avatar, competitive games, game status notifications
Lacroix et al 2008 [71, 72]	Wearable + web	LED lighting provides feedback, online detailed feedback, goal-setting
Albaina et al 2009 [39]	Wearable + interactive photo frame	Graphical feedback, automated goal-setting, virtual coach
Bickmore et al 2009 [73]	PDA + web	Virtual, context-aware coach
Fialho et al 2009 [74]	Wearable + web	Social networks, messaging, accept challenges, user can comment on PA, virtual coach
Arsand et al 2010 [75]	Smartphone app	Automated goal-setting, health information access
Mattila et al 2010 [76,77]	Smartphone app + wireless scales	Diary, graphical feedback
Penados et al 2010 [78]	Interactive pocket toy	Mood of toy provides feedback
Lim et al 2011 [79]	Wearable	LED light intensity provides feedback
Shuger et al 2011 [80]	Wearable + web	Feedback on PA, telephone counselling with HCP
Burns et al 2012 [81]	Wearable + web	Wearable LED flashes/changes colour if others physically active
Gomes et al 2012 [40]	Wearable + web	Online game, monetary rewards, friend list, newsfeed
Pellegrini et al 2012 [82]	Wearable + web	Feedback on PA, calories, and weight, online detailed feedback, and goal-setting with HCP
Reijonsaari et al 2012 [83]	Wearable + web	Online detailed feedback, and telephone/online counselling with HCP
Van Hoye et al 2012 [84]	Wearable	Feedback on calories and PA, goal-setting, and HCP coaching sessions
Xu, Poole, et al 2012 [85,86]	Wireless pedometer + web	Online team game, avatars, message board, teacher customisation

Barwais et al 2013 [87]	Wearable	LED lighting provides feedback, online detailed feedback, goal-setting and motivational messages
Bentley et al 2013 [88]	Smartphone app + Web	Widget shows statistical relationships between diet, PA, and contexts via context-sensing
Chatterjee et al 2013 [89,90]	Smartphone app + SMS	Motivational messages, personalised newsletter
Fitzsimmons et al 2013 [91]	Wearable	Supports consultations and goal-setting with HCP
Harries et al 2013 [92,93]	Smartphone app	Avatar, social comparison messages
Hirano et al 2013 [94]	Smartphone app	Wallpaper supports continuous graphical FB, vibration prompts, goal-setting and scheduling
Khalil & Abdallah 2013 [95]	Smartphone app	Social networks, share PA data with team, view team progress
Khan & Lee 2013 [96]	Smartphone app + SMS	Automated advice based on activity levels and location detected
King et al 2013 [97] [98]	Smartphone app	Wallpaper for continuous PA feedback, goal-setting, automated "just-in-time" advice, message boards, avatar
Nakajima et al 2013 [99]	Wireless pedometer + interactive photo frame	Interactive painting provides feedback on PA
Tabak et al 2013 [100,101]	Smartphone app + web + SMS	Virtual coach, automated advice, social graphs, diary
Valentin & Howard 2013 [102]	Smartphone app	Vibration prompts, avatar, goal-setting
Bond et al 2014 [103,104]	Smartphone app	Just-in-time audio reminder for PA break, graphical feedback
Caulfield et al 2014 [105]	Wearable + web	Online detailed feedback
Chen & Pu 2014 [106]	Smartphone app	Dyads/friends share badges, different social settings
Glynn et al 2014 [107-109]	Smartphone app	Graphical feedback, goal-setting
Miller et al 2014 [110]	Wireless pedometer + web	Online team game, message board
Thompson et al 2014 [111]	Wearable + web	Online detailed feedback, online PA education, GS, counselling with HCP
Thorndike et al 2014 [112]	Wearable + web	Online detailed FB, monetary rewards, team-based competition
Verwey et al 2014 [113]	Smartphone app + Web	User can enter comments about PA, goal-setting with HCP
Walsh et al 2014 [114]	Wearable + web	User profile, social network, currency based game
Zuckerman et al 2014 [115]	Smartphone app	Wallpaper supports continuous graphical feedback, avatar, automated goal-setting, notifications
Cadmus-Bertram et al 2015 [116,117]	Wearable + web	Self-regulation skills (goal setting and frequent behavioural feedback)
Direito et al 2015 [118]	Smartphone app	Education, social networking/forums/messaging

Finkelstein et al 2015 [119,120]	Wearable + web	Monetary rewards, charity donation
Frederix et al 2015 [121]	Wearable + SMS	Goal setting, weekly advice, and exercise training with HCP
Frederix et al 2015 [122]	Smartphone app + wearable + SMS	Tailored exercise training protocols, encouraging messages that change over time texts regarding diet and smoking
Garde et al 2015 [123]	Smartphone app	Team game, reward badges
Gouveia et al 2015 [124]	Smartphone app	Goal setting, contextualizing physical activity via context-sensing, and textual feedback that continuously updates
Guthrie et al 2015 [125]	Wearable + web	Goal-setting, rewards (badges, monetary incentives), avatar, social comparison, social facilitation
Komninos et al 2015 [126]	Smartphone app	Audio feedback via degraded music quality until user reaches target cadence
Lee et al 2015 [127]	Wearable + web	Personalised planning and goal-setting
Lee et al 2015 [128]	Wearable	Material engraver; tailored feedback using representative patterns
Martin et al 2015 [129]	Smartphone app + wearable + SMS	Automated coaching texts with positive reinforcement messages
Munson et al 2015 [130]	Wearable + web	Custom website which links to wearable and social networks, automated goal-setting, public goal commitments
Rabbi et al 2015 [131]	Smartphone app	Automated and personalised suggestions and feedback on diet and PA using recommender systems
Verwey et al 2015 [132-134]	Smartphone app + Web	Annotate and comment on daily PA, share with HCP and goal-setting
Wadwha et al 2015 [135]	Smartphone app + web	Notifications to increase activity time, leadership board, monetary rewards
Wang et al 2015 [136]	Smartphone app + wearable + SMS	Activity prompt and goal-setting via SMS
Watson et al 2015 [137]	Wearable + wireless scales + web	Goal-setting and automated feedback on weight, diet and PA, meal suggestions, social support via community forum
Broekhuizen 2016 [138]	Wearable + web + SMS/email	Goal-setting, sustainability support, personal e-coach sends PA advice
Butryn et al 2016 [139]	Wearable + web	Goal-setting, leaderboard to support social comparison, social support
Choi et al 2016 [140]	Smartphone app + wearable	Daily text or video message, interactive automated feedback and advice, images and video clips regarding posture and stretching
Ciman et al 2016 [141]	Smartphone app	Stair-climbing game, with individual, collaborative and competitive modes
Darvall et al 2016 [142]	Wearable	Feedback on PA
Ding et al 2016 [143]	Smartphone app + wearable	Just-in-time context-aware reminders with explanations of context to support behaviour change
Fennell et al 2016 [144]	Wearable	Positive reinforcement through material incentives, negative reinforcement via monetary buy ins.

Garde et al 2016 [145]	Smartphone app + wearable	PA is rewarded by playtime and game incentives such as special features, unlocked levels, competitive score keeping, and peer interaction
Gilson et al 2016 [146]	Smartphone app + wearable	Feedback on PA, dietary logging
Glance et al 2016 [147]	Wearable + web	Team averages, reward badges, prizes, Leaderboards, Social Network
H-Jennings et al 2016 [148]	Wearable + web	Leaderboard to track individual daily progress, a forum for discussions, references on PA and sleep
Hartman et al 2016 [149]	Smartphone app + wearable + web	Self-regulatory skill building, goal-setting
Herrmany et al 2016 [150]	Smartphone app	Automated goal recommendations, manual goal setting, record reference routes
Melton et al 2016 [151]	Smartphone app + wearable + web	Weekly health tips and reminders
Patel et al 2016 [152-154]	Smartphone app + wearable + SMS	Individual or combined financial incentives, different social comparison settings
Paul et al 2016 [155]	Smartphone app	Avatar, view when others' active, individual goal-setting, image-based rewards
Quintiliani et al 2016 [156]	Wearable + wireless scale + telephone	Telephone counselling with HCP
Vorriink et al 2016 [157]	Smartphone app + web + SMS	Website for physiotherapists to monitor patients and adjust goals
Walsh et al 2016 [158]	Smartphone app	Goal-setting, visually appealing graphic display of step-count history
Yingling et al 2016 [159]	Wearable + web	Online diary
Ashton et al 2017 [160]	Smartphone app + wearable + web	Educational website, social network
Chen et al 2017 [161]	Smartphone app + wearable	Team dyads, leaderboard and collective goal setting for social cooperation and comparison
Chung et al 2017 [162]	Smartphone app + wearable	Graphical feedback on PA, social network
Gell et al 2017 [163]	Wearable + SMS	Location-based feedback including a map of MVPA bout locations, discussion, goal-setting and planning with HCP
McMahon et al 2017 [164]	Wearable	Feedback on PA, small in-person group discussions to support interpersonal (social support, social comparison) and intrapersonal (goal-setting) behaviour change strategies
Neil-Sztramko et al 2017 [165]	Wearable + web	Feedback on PA, remote behavioural counselling sessions with HCP
Valle et al 2017 [166]	Wearable + wireless scales + web	Weight gain education, real-time feedback and weekly tailored feedback

a All interventions included sensor-based feedback on physical activity

b PA = Physical activity, HCP = Healthcare Professionals

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