

# MORE ACTIVE AND A HEALTHY LIFESTYLE BY USING MOBILE APPS? A SYSTEMATIC REVIEW

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## Background

Recently, the American Heart Association published a ‘call to action’ to emphasize the importance of lifestyle counseling.<sup>1</sup> It seems that health professionals do not provide sufficient attention to this important topic, because of a lack of time or tools. Applications (apps) or activity trackers are easily accessible, little time consuming and could assist professionals in lifestyle counseling. However, little is known about effects of this technology on lifestyle.

## Aim

To provide an overview of effect of physical activity and healthy food apps and activity trackers on lifestyle.

## Methods

Pubmed, Embase, Cinahl and Cochrane Library were searched for relevant papers on the effect of apps and activity trackers on lifestyle. Inclusion criteria were (1) use of mobile app or activity tracker, (2) apps for improving physical activity or food patterns, (3) used by adults with an unhealthy lifestyle, (4) for preventive medicine or health promotion and (5) effects measured on physical activity, food patterns or weight. Based on inclusion and exclusion criteria, three researchers selected relevant studies and summarized the results. The quality of evidence was determined by using the GRADE system (A, B, C or D).<sup>2</sup>

## Results

Out of 1141 results, seventeen studies were included. Table 1 provides a description of technology used in included studies and a summary of results is presented in Table 2.

Table 1 Type of technology	
Authors	Used app
Apps	
Allen et al. 2013	Lose it! app
Carter et al. 2013	My Meal Mate app
Cowdery et al. 2015	Zombies,Run!, The Walk app and Moves
Fukuoka et al. 2015	Mobile Phone–Based Diabetes Prevention Program (incl mDPP app)
Glyn et al. 2014	Accupedo-Pro Pedometer app
Hebden et al. 2014	Mhealth program with 4 smartphone apps (PA, sedentary behavior, vegetable and fruit intake, SSB intake)
King et al. 2015	Analytic app, social app of affective app
Kirwan et al. 2012	iStepLog app
Laing et al. 2014	MyFitnessPal
Lee et al. 2010	SmartDiet programma with Diet planner (with MyPage app) and Diet game
Svetkey et al. 2015	Smartphone app developed by researchers
Turner McGrievy et al. 2013	Fat secret app (or other PA or diet tracker app)
Wharton et al. 2014	Lose it! app
Activity trackers	
Bond et al. 2014	SenseWear Mini Armband + B-mobile app
Cadmus-Bertram et al. 2015	Fitbit one + website
Finkelstein et al. 2015	Fitbit + fitbit app
Shuger et al. 2011	SenseWear platform (armband, real-time display and web account Weight Management Solutions)
PA=physical activity; SSB=sugar-sweetened beverages	

Table 2 . Effect of apps and activity trackers on physical activity, food pattern and weight, combined with a quality of evidence score.			
Authors	Effect physical activity (+/-)	Effect food (+/-)	Effect weight (+/-)
Apps			
Allen et al. 2013	-	-	-
Carter et al. 2013	NA	NA	+
Cowdery et al. 2015	-	NA	-
Fukuoka et al. 2015	+	+	+
Glyn et al. 2014	+	NA	-
Hebden et al. 2014	+	+	+
King et al. 2015	+	NA	NA
Kirwan et al. 2015	+	NA	NA
Laing et al. 2014	-	NA	-
Lee et al. 2010	NA	NA	+
Svetkey et al. 2015	NA	NA	-
Turner McGrievy et al. 2013	+	+	+
Wharton et al. 2014	NA	-	+
Quality of Evidence (Grade)	B	B/C	B
Activity trackers			
Bond et al. 2014	+	NA	NA
Cadmus-Bertram et al. 2015	+	NA	-
Finkelstein et al. 2015	+	NA	NA
Shuger et al. 2011	NA	NA	+
Quality of Evidence (Grade)	C	NA	C
+ = Significant improvement; - = no significant improvement; NA = not applicable; A = high quality; B = moderate quality; C = low quality; D = very low quality			

## Conclusion

Studies did not agree on effects of apps on physical activity and weight. Effects on food patterns seemed positive. Also, little research has been done on the effect of activity trackers on lifestyle. Considering the quality of the studies, further large scale research with a balanced control group and long-term follow-up measurements is needed before we can recommend apps to professionals. In addition, examining specific app functions and effects of these functions should be topic of future research.

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<sup>1</sup> Berra K, Rippe J, Manson JE. Making physical activity counseling a priority in clinical practice: The time for action is now. JAMA. 2015;314:2617-8-2.

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