

Strength and Conditioning Journal
Environmental Changes to Facilitate Weight Loss
--Manuscript Draft--

Manuscript Number:	SCJ-D-15-00150R4
Full Title:	Environmental Changes to Facilitate Weight Loss
Article Type:	Columns
Corresponding Author:	Justin Kompf, B.S. SUNY Cortland Cortland, NY UNITED STATES
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	SUNY Cortland
Corresponding Author's Secondary Institution:	
First Author:	Justin Kompf, B.S.
First Author Secondary Information:	
Order of Authors:	Justin Kompf, B.S.
Order of Authors Secondary Information:	
Manuscript Region of Origin:	UNITED STATES
Abstract:	Many eating behaviors are encouraged by environmental triggers which exist in kitchens, grocery stores, and even in the behavioral norms of social circles. Trainers can encourage an easier course to weight loss by modifying their client's environment.
Opposed Reviewers:	
Response to Reviewers:	

Title: Environmental Changes to Facilitate Weight Loss

Key words: social network, action triggers, behavioral change, health promotion, weight loss

Abstract:

Many eating behaviors are encouraged by environmental triggers which exist in kitchens, grocery stores, and even in the behavioral norms of social circles. Trainers can encourage an easier course to weight loss by modifying their client's environment.

Modifying the Eating Environment	Social Network Considerations
<ul style="list-style-type: none">• Decrease the visibility and ease of access of unhealthy food• Increase the visibility and ease of access of healthy food• Help clients find one place to eat at home and at work• Encourage clients to purchase smaller plates• Serving bowls should be left on the counter not the dinner table	<ul style="list-style-type: none">• Encourage clients to eat with light eaters• Help clients identify people they consider the most healthy in their social circles• If a client eats with a large group of people instruct them to preplan how much they are going to eat or wait ten minutes before eating

1
2
3
4
5
6
7 Trainers and health coaches are frequently sought after by prospective clients to aid in
8 accomplishing weight loss goals. In order to help people lose weight, trainers should identify and
9 change poor health habits such as sedentary behavior and eating behavior. Change is a complex
10 process that can occur over a long time period as well as spontaneously. It involves emotional,
11 motivational, interpersonal, situational, and cognitive components (5). Heath and Heath, the
12 authors of the book *Switch* identify strategies to approach a change effort (4). One of these
13 strategies is environmental modification. The environment includes the triggers that influence
14 behavior as well as the individual's social network. This article focuses on environmental
15 changes a trainer can offer their clients to help weight loss efforts. The research covered in this
16 column provides valuable information indicating that a coach is able to help their clients change
17 unhealthy habits by modifying their eating environment and by identifying the influence of
18 social networks and social cues on behaviors.
19
20
21
22
23
24
25
26
27
28

29 **Modifying the Eating Environment**

30
31

32 The eating environment is characterized by the location in which an individual eats as
33 well as the design of the environment in which they are eating. In a classic paper, Penick, Lilion,
34 Fox, and Stunkard applied key behavioral modification principles to participants in a weight loss
35 study (6). One principle the group implemented was the modification and control of
36 discriminatory stimuli governing eating. For this principle eating was confined to one place. In
37 the participant's case this place was the dining room. In their study 53% of participants in the
38 experimental group lost more than twenty pounds. Furthermore, 33% of participants lost more
39 than thirty pounds, and 13% lost more than forty pounds. Of particular relevance to trainers who
40 want to improve their clients eating environment is the limitation of places where participants
41 could eat. Trainers can advise their clients to eat in one place at home and at work. This may
42 help them practice mindful eating and avoiding over snacking.
43
44
45
46
47
48
49
50
51
52

53 Trainers can also help clients eat better or less by molding the eating environment within
54 their home. Consumption of food will decrease by encouraging clients to buy smaller dinner
55 plates (i.e. from a 12 inch plate to a 10 inch plate) and smaller package sizes (14). In a 2004
56 review, Wansink provides excellent examples of ways to shape the eating environment which
57 trainers can share with their clients to help them eat less and better (12). For example, serving
58
59
60
61
62
63
64
65

1
2
3
4 bowls should not be left on the dinner table and healthy foods should be made more visible by
5
6 placing them in front of the refrigerator.
7
8

9 To help decrease consumption trainers can teach clients to decrease the visibility and ease
10 of access to unhealthy food. To illustrate the influence of visibility and ease of eating, Wansink,
11 Painter, and Lee gave secretaries jars of chocolates that were either clear or opaque with
12 Hersey's kisses inside of them (13). The candy was either within arm's reach, or out of arms
13 reach 6 feet away. Throughout the study the type of jar and the distance the jar was from the
14 secretary rotated. Each secretary experienced conditions of clear and opaque jars both close and
15 far away from them. When the jar was close and visible secretaries ate on average 7.7 candies
16 per day compared to 3.1 candies on average per day when the candy was far away and in an
17 opaque jar. Proximity and salience led to over four extra candies consumed on a daily basis. The
18 participants in the study believed that the two meters between them and the candy gave them an
19 extra second to pause and reconsider whether they were really hungry enough to want or need
20 another candy.
21
22
23
24
25
26
27
28
29
30
31

32 Trainers can encourage their clients to decrease the visibility of unhealthy food in their
33 house. For example, a bag of chips in front of the cupboard can be moved to the back of the
34 cupboard and a carton of ice cream in the upstairs freezer could be moved to a basement freezer.
35 Decreasing the salience of such food would be advised. On the other hand, increasing the
36 visibility of healthy food would be recommended. For instance, trainers can encourage their
37 clients to put fruit bowls on their kitchen table. A trainer may also have clients line up five pieces
38 of fruit by the door and tell them they should take a piece before going to work each day. This is
39 a convenient, easy, and simple to follow habit. Finally, encourage clients to decrease the ease of
40 access to unhealthy food. For example, rather than using a clip for a chip bag have clients tape
41 the bag shut. This small inconvenience may help to decrease the amount of times a client reaches
42 for the chip bag.
43
44
45
46
47
48
49
50
51
52

53 **Social Network**

54
55
56 The social network also plays a role in behavior. In a large and insightful experiment
57 Christakis and Fowler, studied over 12,000 subjects from 1971 to 2003 (1). The investigators
58
59
60
61
62
63
64
65

1
2
3
4 found that the risk of obesity at one degree of separation was 45% higher in observed networks
5 when compared to random networks. At two degrees of separation, the risk was 20% higher and
6 10% higher at three degrees of separation. When a participant had what was considered a mutual
7 friendship, their risk of obesity increased by 171 % if their mutual friend became obese.
8
9 Furthermore, the odds of becoming obese increase 57% if a participant had a non-mutual friend
10 who became obese within a certain time frame. The odds of becoming obese increased 40% if a
11 participant had a sibling who became obese and the odds of becoming obese increased by 37% if
12 a participant had a spouse that had become obese.
13
14
15
16
17
18
19

20
21 It seems that social environment plays a role in the spread of obesity. The social
22 environment is harder to change than the kitchen environment. Having a spouse or mutual friend
23 who considers change as a challenge to a lifestyle they enjoy may prove to be problematic (5).
24 Christakis and Fowler's study indicates that the company a person keeps can influence weight
25 gain. By having a social circle of people who became obese or overweight, a person is more
26 likely to also become obese or overweight. This may be caused by shared habits and activities
27 that lead to the outcome of weight gain. Fortunately, this can be applied positively by keeping a
28 social circle full of physically active people who have good eating habits. Descriptive norms,
29 which describe how people act, have positive influences on health behaviors. For example,
30 descriptive norms about fruit consumption have shown to positively influence intake (11).
31 Descriptive norms have also prompted increased light physical activity at work, thus breaking up
32 periods of sedentary behavior (7,8). How others behave has been shown to have a positive
33 influence on effort as well. Spink, Crozier, and Robinson found that the amount of effort an
34 individual perceived a friend on a team to make had an impact on their own effort level (10).
35
36
37
38
39
40
41
42
43
44
45
46

47 Trainers should help clients identify healthy friends they have in their social circle. These
48 people can be identified during an initial consultation with a new client. For example, a trainer
49 may ask their prospective client to identify who they consider the two healthiest people in their
50 social network. Other social factors can influence how much or how little people eat. The
51 number of people a person is eating with and the eating behaviors of these people have an impact
52 on consumption. When people eat in groups they tend to eat more than if they were alone. This
53 is because of the increased time at the dinner table (3,9) which is likely caused by socializing. De
54 Castro and Brewer found that when one other person was present at a meal, the meal size
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4 increased by 28%. Meal sizes increased 41%, 53%, 53%, 71%, and 76% respectively when
5
6 2,3,4,5, and 6 or more people accompanied the participants (3). Furthermore, Redd and de Castro
7
8 observed that food intake was 60% lower when participants were instructed to eat alone
9
10 compared to when they were instructed to eat with others (9). This equated to 212 kcals less per
11
12 day when eating alone. People also tend to model the eating behavior of who they are with. If an
13
14 eating companion consumes a lot of food the individual dining with them will tend to eat more
15
16 than if the companion was a light eater (2). If a client typically eats or plans to eat with a large
17
18 group of people, instruct them to wait ten minutes before touching their food. If their meal is
19
20 finished and people are socializing at the dinner table, have clients move any appetizers or bread
21
22 that is left on the table out of arms reach. If a client is trying to lose weight, encourage them to
23
24 eat meals with light eaters. If they do eat meals with heavy eaters instruct them to preplan how
25
26 much food they are going to eat rather than deciding on the spot.

27 {Insert Table 1}
28
29

30 **Conclusion** 31

32
33 Research has demonstrated that environmental cues can be modified to have positive
34
35 impacts on eating behavior. In order to facilitate a change effort, the trainer should look at ways
36
37 in which they can modify their client's environment to make change easier. The trainer can help
38
39 clients design kitchens environments that encourage healthy eating and instruct their clients to
40
41 eat in a designated spot. The trainer can also help decrease the consumption of unhealthy food by
42
43 reducing the salience and proximity of such food. Clients should also identify individuals in their
44
45 social network who would either support or hinder their weight loss goals. Finally, trainers can
46
47 help provide clients with strategies to avoid overeating in social situations.
48

49 **Justin Kompf is the head strength coach and adjunct instructor at the State University of New York at**
50 **Cortland.**
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4
5
6
7 **References**
8
9

- 10 1. Christakis NA, and Fowler JH. The spread of obesity in large social network over 32
11 years. *N Engl J Med* 357(4): 370-379, 2007.
12
13 2. Cruwys T, Bevelander KE, and Hermans RC. Social modeling of eating: A review of
14 when and why social influence affects food intake and choice. *Appetite* 86: 3-18, 2015.
15
16 3. deCastro JM, and Brewer M. The amount eaten in meals by humans is a power function
17 of the number of people present. *Physiol Behav* 51(1): 121-125, 1992.
18
19 4. Heath C, and Heath D. *Switch: How to Change Things When Change Is Hard*. New
20 York: Broadway. Print, 2010.
21
22 5. Heatherton TF, and Nichols PA. Personal accounts of successful versus failed attempts at
23 life change. *Pers Soc Psychol Bull* 20: 664-675, 1994.
24
25 6. Penick SB, Lilion R, Fox S, and Stunkard AJ. Behavior modification in treatment of
26 obesity. *J Behav Med* 33, 49-56, 1971.
27
28 7. Priebe CS, and Spink KS. Using messages promoting descriptive norms to increase
29 physical activity. *Health Commun: 27*: 284-291, 2011.
30
31 8. Priebe CS, and Spink KS. Less sitting and more moving in the office: Using descriptive
32 norm messages to decrease sedentary behavior and increase light physical activity at
33 work. *Psychol Sport Exerc* 19: 76-84, 2015.
34
35 9. Redd M, and de Castro JM. Social facilitation of eating: Effects of social instruction on
36 food intake. *Physiol Behav* 52(4): 749-754, 1992.
37
38 10. Spink KS, Crozier AJ, Robinson, B. Examining the relationship between descriptive
39 norms and perceived effort in adolescent athletes: Effects of different reference groups.
40 *Psychol Sport Exerc* 14: 813-818, 2013.
41
42 11. Stok FM, de Ridder DT, de Vet E, and Wit JB. Don't tell me what I should do, but what
43 others do: The influence of descriptive and injunctive peer norms on fruit consumption in
44 adolescents. *Brit J Health Psych* 19: 52-64, 2014.
45
46 12. Wansink B. Environmental factors that increase the food intake and consumption volume
47 of unknowing consumers. *Annu Rev Nutr* 24: 455-579, 2004.
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

13. Wansink B, Painter JE, and Lee YK. The office candy dish: Proximity's influence on estimated and actual consumption. *Int J Obes* 30: 871-875, 2006.

14. Wansink B. From mindless eating to mindlessly eating better. *Physiol Behav* 100: 454-463, 2010.