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Science Agency

# Characteristics associated with greater weight loss success

CSIRO Total Wellbeing Diet Online

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# 1 Summary of findings

## **Greater early weight loss success on the CSIRO Total Wellbeing Diet Online**

Members of the CSIRO Total Wellbeing Diet Online who stayed on the program and achieved most weight loss in the first 3 weeks:

- Were heavier than other members when they started the program, but
- Were able to lose 1kg or more per week for the first 3 weeks; and
- Achieved 3 times greater total weight loss on the program than those who had slower early weight loss.

Members who were able to lose more than 0.5kg per week and those who were able to lose 1kg or more per week both had similar patterns of platform usage, which was higher than the other groups who lost less than 0.5kg per week for the first 3 weeks (or gained weight). The most successful group had a higher BMI at the start of the program which may partially explain the greater early success than just platform usage alone.

Key platform usage of members who lost most weight early on the program included:

- Recording their weight more often than other members – almost twice per week for the first 3 weeks;
- Using the menu plans and diary features nearly 3 times per day in the first 3 weeks; and
- Using the forum once per week in the first 3 weeks.

## **Greater longer term weight loss on the CSIRO Total Wellbeing Diet Online**

Members of the CSIRO Total Wellbeing Diet Online who stayed on the program and lost 15% of their starting body weight or more:

- Achieved 11.2kg weight loss in their first 12 weeks and an average of 20kg while a member of the program;
- Were heavier than other members when they started the program and were members of the program for longer; but
- They also did well in the first 3 weeks, losing significantly more weight than other members.

Members who lost at least 5% of their starting body weight (highest three weight loss categories) tended to have similar patterns of platform usage.

Key platform usage characteristics of members that lost 15% of their starting body weight or more included:

- Recording their weight at least once per week every week in their first 12 weeks;
- Using the menu plans and diary features around 1-2 times per day;
- Using the food search once per week and doing this regularly throughout the program.

## 2 Objectives and method

### 2.1 Objectives

The aim of this analysis was to gain a deeper understanding of the patterns of platform usage associated with:

- greater early weight loss on the CSIRO Total Wellbeing Diet Online;
- greater longer term weight loss success on the CSIRO Total Wellbeing Diet Online.

### 2.2 Method for this analysis

This secondary analysis follows on from the primary analysis of the CSIRO Total Wellbeing Diet Online which used data from 59,686 members who had signed up to the program between October 2014 and September 2019.

The analysis presented here used data from *Stayers* only who were defined as members who signed up to at least 12 weeks of the program and entered their weight in the platform at baseline and at the end of the program. This was calculated as members with a paid membership equal to or greater than 84 days (12-week program duration) and for whom days between their first and last entered weight was equal to or greater than 77 days ( $\pm$  one-week for first or last weigh-in). There were 22,658 members who were categorized as stayers and utilised in this analysis.

Usage of the platform, as an average per week, was described overall and for each of the platform features: diary, menu plans, exercise plans, forum, program content, forum, food search and weigh ins.

Weight loss was calculated as weight loss in kilograms and percentage of starting body weight lost for the subgroups of interest. These subgroups were:

#### **Early weight loss on the program**

To examine characteristics of early weight loss success on the program, the weight loss over the first 3 weeks of the program was calculated. Four groups were created based on weight loss within the first 3 weeks.

- Weight gain (n=980);
- Small weight loss: an average of less than 0.5kg per week for the first 3 weeks; less than 1.5kg over 3 weeks (n=5494);
- Moderate weight loss: an average of more than half but less than 1kg per week for the first 3 weeks; greater than 1.5kg but less than 3kg over 3 weeks (n=7976);
- Greatest weight loss: an average of 1kg or more per week for the first 3 weeks; 3kg or more over 3 weeks (n=8081).

#### **Longer term total weight loss on the program**

Total weight loss on the program was also calculated as a percentage of starting body weight, and categorized into 5 groups:

- Weight gain (n=2518);
- Weight loss greater than 0 and less than 5% of starting body weight (n=9058);
- Weight loss equal to 5% and less than 10% of starting body weight (n=7616);
- Weight loss equal to 10% and less than 15% starting body weight lost (n=2612);
- Weight loss of 15% of starting body weight or more (n=854).

## 3 Results

### 3.1 Achieving greater early weight loss on the program

Members who lost the most weight in the first 3 weeks:

- Had a significantly higher average BMI at the start of the program than other groups (34.1 vs 30.7-31.3, Table 1).
- 72.5% were obese and 25.3% were overweight at the start of the program. The proportion of members who were obese in this group was higher than the group that did moderately well early on the program (72.5% vs 53.8%).

### 3.2 Early weight loss was associated with greater total weight loss on the program

Among members who completed the program, achieving greater early weight loss was associated with higher total weight loss on the program (Table 1, Figure 1).

- Members who were most successful early on the program lost 4.6kg in the first 3 weeks compared to 2.2kg and 0.7kg for the other groups.
- These members continued to do well over the full 12 week program and achieved a total weight loss of 8.0kg over 12 weeks compared to 4.4kg and 2.3kg for those who had a slower start.
- Those who lost the most weight early on the program, ended up losing 3 times more weight overall than those who lost a smaller amount of weight early on the program.
- Although it was only a small number of members (n=980, 4.3% of Stayers), those who gained weight in the first 3 weeks did not end up losing weight over their first 12 weeks on the program.

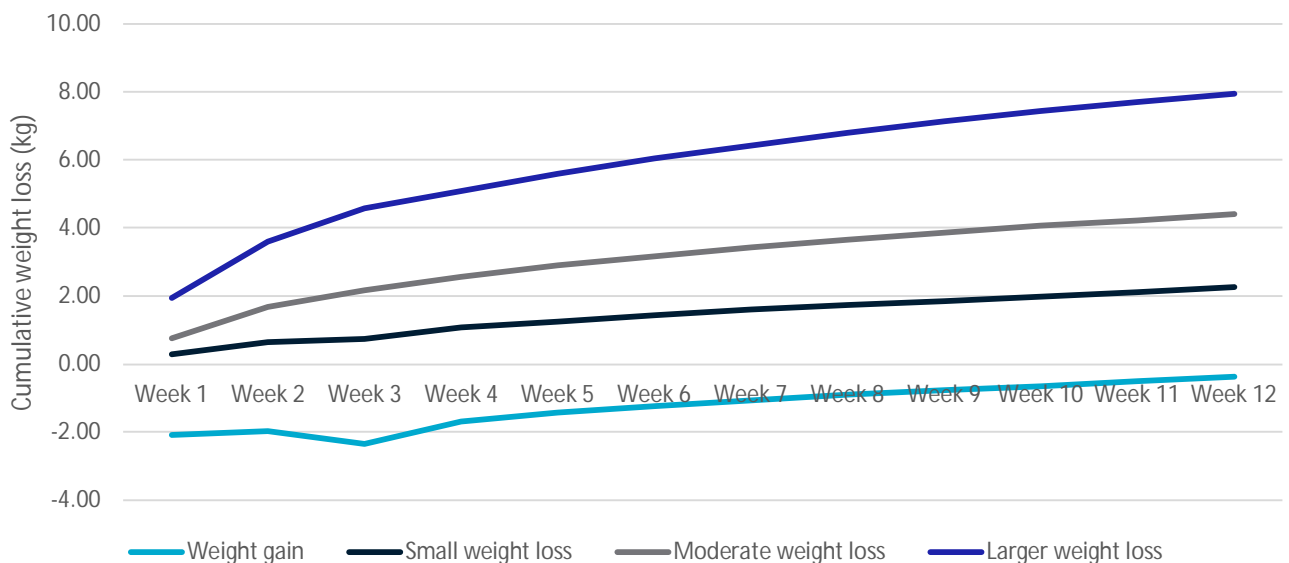


Figure 1. Cumulative weight loss over first 12 weeks on the program, by categories of early weight loss.

### 3.3 Summary of platform usage among those who were most successful early on the program

Members who lost the most weight in the first 3 weeks (Table 1):

- Started the program 2.2 days after they registered which was slightly less than those who lost only a small amount of weight in the first 3 weeks (2.5 days). This difference was very small but statistically significant.
- Started the program 1.7 days after they finished program set up. This was slightly less than other groups (1.9-2.0 days, although the difference was also statistically significant).

The platform usage of members who stayed on the program and lost the most weight early included (Table 1):

- Using the platform about 6 times per day in the first three weeks (6.4 times per day).
- Using the menu plans and diary features almost 3 times per day for each feature. These members used the menu plans 2.7 times per day and the diary 2.8 times per day in the first three weeks.
- Recording a weight almost twice per week.
- Checking and searching foods three times every two weeks (1.7 times per week).
- Using the forum once per week.

Members who lost the most weight early on the program weighed themselves slightly more than all other groups. Their usage of the other platform features was higher than those members who lost a small amount of weight early on the program but not higher than those that lost a moderate amount of weight.

**Table 1. Differences in member characteristics and platform usage (per week) in first 3 weeks between weight loss categories in stayers only with 3 week data only**

	Categories of early weight loss				Sig differences
	Weight gain	Small weight loss	Moderate weight loss	Larger weight loss	
<b>n</b>	980	5496	7976	8081	
<b>Member characteristics</b>					
Membership duration	289	254	253	290	*a,b
Starting BMI	31.0	30.7	31.3	34.1	*a,b
Weight loss in first 3 weeks (in kg)	-2.3	0.7	2.2	4.6	*a,b
Weight loss in 12 weeks (in kg)	-0.4	2.3	4.4	8.0	*a,b
Total weight loss on program (in kg)	0.5	2.4	4.4	7.6	*a,b
Percentage body weight lost	0.5	2.8	5.1	7.7	*a,b
<b>Program set up (days)</b>					
Registration to program start	2.4	2.5	2.4	2.2	*a,b
Program set up to program start	1.9	2.0	1.9	1.7	*a,b
<b>Usage per week (first 3 weeks)</b>					
Platform usage	24.3	30.6	43.7	45.1	*a
Diary	10.1	13.7	19.5	19.8	*a
Menu plan	10.1	12.4	18.0	19.0	*a
Exercise plan	0.8	1.0	1.2	1.2	*a
Program content	0.3	0.4	0.5	0.5	*a
Forum	0.6	0.7	1.1	1.1	*a
Food search	0.8	0.9	1.6	1.7	*a
Weigh in	1.7	1.5	1.7	1.9	*a,b

\*p<0.01. For post hoc comparison results, a denotes members with larger early weight loss are significantly different from members with small early weight loss; b denotes members with larger early weight loss are significantly different from moderate early weight loss, with level of significance P<0.01. ns: No statistically significant differences.

### 3.4 Greater longer term weight loss on the program

A subgroup of members was created based on a total weight loss of 15% or more of starting body weight (n=854, 3.8% of those who finish the program).

- 78.2% of these members were obese when they started the program; 19.8% were overweight.
- These members were significantly heavier than other groups at the start of the program and they were members for longer (Table 2).
- The average weight loss among this group was 11.2kg over the 12 week program, and 20.1kg over their membership time (which was equivalent to 20.0% of their starting body weight) (Table 2, Figure 3).
- These members also lost significantly more weight in the first 3 weeks of the program than other groups (4.8kg vs 1.9kg in 3 weeks for those who ended up losing less than 5% of their starting body weight overall).
- These members lost almost 2kg in their first and second weeks on the program and they continued to lose almost 1kg per week for the full length of the 12 week program.



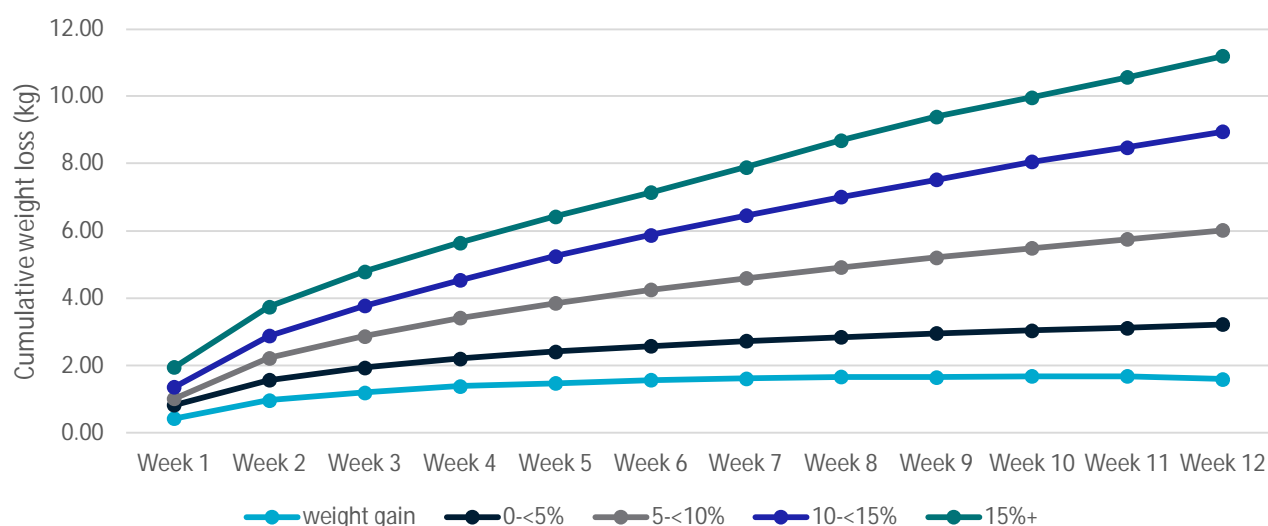


Figure 2. Cumulative weight loss over first 12 weeks on the program, by categories of total percentage weight loss.

### 3.5 Summary of platform usage among those who were successful longer term

Members who lost the most weight on the program (15% or more of their starting body weight):

- Started the program 2.1 days after they registered which was similar to those who lost only a small amount of weight 2.3.
- Started the program 1.6 days after they finished program set up. This was slightly less than other groups (1.5-2.0 days, a small but statistically significant difference, Table 2).

The platform usage patterns of members who stayed on the program and lost most weight included (Table 2):

- Using the platform, almost, 4 times per day (3.8 times per day).
- Using the menu plans and diary features more than once per day (1.5 times per day).
- Recording a weight at least once per week; closer to 3 times every 2 weeks (1.4 times per week).
- Checking and searching foods once per week.

Members who lost the most weight on the program used the platform features more than those who lost a small amount of weight (0 to <5%), however their usage was similar to those who in the two groups that lost 5% or more of their starting body weight (ie 5-<10% and 10-<15%).

**Table 2. Differences in member characteristics and platform usage (per week) in the first 12 weeks of membership, between categories of total weight loss.**

	Categories of total body weight lost					Sig differences
	Weight gain	0 to <5%	5- to <10%	10-<15%	15% +	
<b>n</b>	2518	9058	7616	2612	854	
<b>Member characteristics</b>						
Membership duration	349	266	235	274	355	*a,b
Starting BMI	31.6	31.9	32.1	32.8	34.8	*a,b
Weight loss in first 3 weeks	1.2	1.9	2.9	3.8	4.8	*a,b
Weight loss in 12 weeks	1.6	3.2	6.0	9.0	11.2	*a,b
Total weight loss on program	-2.8	2.4	6.5	11.1	20.1	*a,b
Percentage body weight lost	-3.1	2.6	7.2	11.9	20.0	*a,b
<b>Program set up (days)</b>						
Registration to start	2.0	2.3	2.5	2.3	2.1	ns
Program set up to start	1.5	1.8	2.0	1.9	1.6	*b
<b>Usage per week</b>						
<b>Platform usage</b>	13.6	18.8	26.2	29.9	26.4	*a
Diary	5.5	8.2	11.3	12.8	10.7	*a,b
Menu plan	6.0	8.0	11.4	13.1	11.5	*a
Exercise plan	0.3	0.4	0.5	0.6	0.6	*a
Program content	0.1	0.2	0.2	0.3	0.2	*b
Forum	0.4	0.4	0.6	0.7	0.7	*a
Food search	0.4	0.5	0.9	1.1	1.2	*a
Weigh in	1.0	1.1	1.2	1.4	1.4	*a

\*p<0.01. For post hoc comparison results, a denotes superstars (15%+) are significantly different from members with small weight loss (0-<5%); b denotes superstars (15%+) are significantly different from large weight loss (10-<15%), with level of significance P<0.01. ns: No statistically significant differences.

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