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Background

During the last decade that walking as a sport has gained national support among exercise and health professionals and sponsoring organizations

- Walking is an ideal form of exercise
 - minimal equipment
 - no special talent
 - can be done anywhere.
- In the 1990's marathon walking became the fastest growing trend in marathoning, over 77 million people have turned walking into the number one fitness activity in America.
 - Fewer injuries associated with walking it is low impact, walkers land with 1 to 1-1/2 times their body weight per foot-strike, compared with 3 to 4 times for running.
 - Extolled by the medical profession moderately intense exercise for 30 minutes or more on all days
 - 30,000 in 2000, were willing to collect donations for Team in Training in return for training to walk or run a marathon.
- In the researchers' experience walking a full marathon (26.2 miles) involves many hours of training, development of motivation, establishment of goals, and enhancement of belief in oneself.
- Given that almost every adult walks there is prejudice to overcome for those training to walk a marathon
- Many of the people who signed up for the marathon run team should have been on the walk team, people who identify themselves as marathon runners either do not realize they are primarily walkers, or they are reluctant to identify themselves correctly since walking a marathon is only contemporarily being identified as a separate sport. (Table 3)

Question and Research Hypotheses

The proposed question was: “Are there differences between marathon runners and marathon walkers in the changes in motivation, performance goals and self-efficacy?”

This study’s hypotheses are:

H.1: There is no significant difference in changes in motivation between marathon runners and marathon walkers who have trained for and completed a marathon.

H.2: There is a significant difference in changes in the performance goals between marathon runners and marathon walkers who have trained for and completed a marathon.

H.3: There is no significant difference in changes of self-efficacy between marathon runners and marathon walkers who have trained for and completed a marathon.

Demographics

The population of this study was recruited from a total of 352 “Team In Training” participants signed up to train for the Suzuki Rock ‘n’ Roll Marathon and the Mayors’ Midnight Sun Marathon. The initial psychometric measures were taken by 101 participants; 73 marathon runners and 28 marathon walkers. Sixty-four participants; 42 marathon runners and 22 marathon walkers, took both pre-training and post-marathon psychometric measures, accounting for 18 percent of the TNT population.

Table 1

Subject Retention

Participants	Pre-Test	Post-Test	Retention Rate
Runners	73	42	57 %
Walkers	28	22	78 %

Based on age and sex this study included runners that were statistically close to the norms for “Team In Training” (TNT)

Table 2

Population Demographics

	<u>TNT*</u>		<u>Current Study</u>	
	Runners	Walkers	Runners	Walkers
Female	75%	75%*	74%	77%
Male	26%	26%*	26%	23%
Mean age	35	35*	34	47

* TNT did not distinguish between runners and walkers.

Table 3

Comparison of Marathon Runners and Marathon Walkers Finishing Time

Source	Fastest Finishing Time	Slowest Finishing Time	<i>M</i>	<i>SD</i>
Marathon Runners	3 hr, 38 min	7 hr, 15 min	5 hr, 4 min	1 hr, 29 min
Marathon Walkers	4 hr, 59 min	8 hr, 10 min	6 hr, 53 min	1 hr, 32 min

Design

The study used a quasi-experimental design. The instruments were self-administered psychometric measures, in the form of surveys, questionnaires, and scales, for gathering data during pre-training and post-marathon periods of time.

Statistical Design

This study utilized a repeated measure, two group, pre-test - post-test quasi-experimental designs. Pre-marathon training scores established a baseline and post-test were taken after the subjects completed the marathon. ANOVA was used to analyze all the data.

Psychometric Measures

Motivation of Marathoners Scales

- 56 Item scale.
- 7- Point ordinal scale -- 1 - “not a reason” 7 - “a most important reason”.
- 9 Subscales assess Life Meaning, Psychological Coping, Self-esteem, Health Orientation, Weight Concern, Personal Goal Achievement, Competition, Recognition, Affiliation

Sport Motivation Scale

- 28 items as an answer to the question, “Why do you practice your sport?”
- 7- point ordinal scale
- 7 Subscales assess
 - Intrinsic Motivation – just for the pleasure derived from doing the activity
 - to Know – exploration, curiosity, learning goals
 - to Accomplish Things – mastery, efficacy, task orientation
 - to Experience Stimulation – Flow, peak experience
 - Extrinsic Motivation
 - Identified – Value and judge behavior as important
 - Introjected – internalized pressures – guilt, anxiety –body image
 - External – material rewards or constraints imposed by others

- Amotivation –similar to learned helplessness

Sport Orientation Questionnaire

- 25 questions
- 5-point Likert format
- 3 Subscales – Competitiveness, Win Orientation, Goal Orientation

State-Sport Confidence Inventory And Trait-Sport Confidence Inventory

- 13 items
- 9-point Likert scale
- How confident an individual feels about competing in an upcoming event compared to the most self-confident athlete they know
- State – Right now
- Trait – Usually

Results

Hypothesis 1

There is no significant difference in changes in motivation between marathon runners and marathon walkers who have trained for and completed a marathon.

The summary of the means for the MOMS 9 sub-scales the marathon runners and walkers pre-test and post-test are presented in table 5. The F-test analysis of the interaction between the following groups; runners and walkers, and time – pre-test and post-test, gave a value of .893 with 124 degrees of freedom which failed to reach statistical significance at the .05 level of probability. The interaction F ratios of the 9 subscales of the MOMS are presented in table 6.

The second psychometric measure used to assess motivation was the SMS. The interaction effect of groups by subscales of the SMS is presented in table 8. None of the interaction means were found to be statistically significant at the .05 level, however, as

with the previous analysis, a Studentized Range Statistic was calculated on the largest changes to see if any reached statistical significance at the .05 level. Use of a Studentized Range Statistic post hoc a value of 3.596 indicating that any change of that magnitude would be statistically significant. As shown in table 7 only one variable that reached the necessary magnitude of change “Extrinsic Motivation Identified Walkers”. This changed from 13.5 pre-test to 9.2 post-test. These results would indicate that marathon walkers developed amotivation as a function of participation in a marathon.

Overall, neither the MOMS nor the SMS showed any statistically significant difference in motivation between marathon runners and marathon walkers; thus, the hypothesis was accepted.

Table 5

Summary Scores Pre-Test and Post-Test for the 9 Subscales of the MOMS for Runners and Walkers

Subscale	<u>Pre-Test</u>		<u>Post-Test</u>		Δ	<i>SD</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Life Meaning Runners	19.9	10.4	20.7	10.4	+0.8	3.22
Life Meaning Walkers	19.6	10.7	16.1	8.4	-3.5	2.90
Psychological Coping Runners	22.4	19.6	23.4	12.7	+1.0	3.56
Psychological Coping Walkers	23.3	20.4	21.1	10.9	-2.2	3.30
Self-Esteem Runners	33.2	10.7	30.3	14.4	-2.9	3.79
Self-Esteem Walkers	30.4	12.3	30.0	12.0	-0.4	3.46
Health Orientation Runners	16.3	7.5	28.4	13.3	+12.1	3.65
Health Orientation Walkers	30.4	7.9	29.8	9.6	-0.6	3.10
Weight Concern Runners	16.7	7.0	16.2	6.1	-0.5	2.47
Weight Concern Walkers	17.3	6.5	17.9	5.6	+0.6	2.37
Personal Goal Achievement Runners	25.4	7.6	27.1	8.2	+1.7	2.86
Personal Goal Achievement Walkers	25.1	10.3	30.8	18.0	+5.7	4.23
Competition Runners	6.5	4.4	7.3	3.4	+0.8	1.84
Competition Walkers	7.5	5.5	6.9	3.2	-0.6	1.79
Recognition Runners	15.5	8.5	17.9	8.6	+2.4	2.93
Recognition Walkers	13.1	9.5	14.1	9.1	+1.0	3.02
Affiliation Runners	20.1	8.2	23.8	9.7	+3.7	3.11
Affiliation Walkers	20.0	7.6	20.6	8.5	+0.6	2.92

Table 6

Two Way Interaction Solution of the Principal Components of the 9 Subscales of the MOMS

Subscale	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P Value</i>
Life Meaning	1	136.9	1.30	<i>P</i> = .25
Psychological Coping	1	76.4	0.28	<i>P</i> = .99
Self-Esteem	1	42.8	0.27	<i>P</i> = .99
Health Orientation	1	55.8	0.54	<i>P</i> = .99
Weight Concern	1	9.3	0.24	<i>P</i> = .99
Personal Goal Achievement	1	115.0	1.01	<i>P</i> = .35
Competition	1	14.1	0.82	<i>P</i> = .99
Recognition	1	13.3	0.17	<i>P</i> = .99
Affiliation	1	67.2	0.89	<i>P</i> = .99

Table 7

Means and Standard Deviations Comprising the Main Effects Across the 7 Subscales of the SMS

Subscale	<u>Pre</u>	<u>Test</u>	<u>Post</u>	<u>Test</u>	Δ	<i>SD</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Intrinsic Motivation – Stimulation - Runners	17.7	8.5	16.8	5.9	-0.9	2.43
Intrinsic Motivation – Stimulation - Walkers	13.2	6.9	13.9	7.5	+0.7	2.74
Intrinsic Motivation – Accomplishment - Runners	15.4	5.5	15.5	6.0	+0.1	2.45
Intrinsic Motivation – Accomplishment - Walkers	12.8	6.7	12.6	6.1	-0.2	2.47
Intrinsic Motivation – to Know – Runners	12.9	5.7	13.7	5.7	+0.8	2.39
Intrinsic Motivation – to Know – Walkers	12.6	8.2	12.6	8.1	0.0	2.85
Extrinsic Motivation – Identified – Runners	12.7	5.8	13.5	5.5	+0.8	2.35
Extrinsic Motivation – Identified – Walkers	13.5	5.5	9.2	5.4	-4.3	2.32
Extrinsic Motivation – Introjected – Runners	10.1	5.6	12.8	5.9	+2.7	2.43
Extrinsic Motivation – Introjected – Walkers	11.2	5.1	10.8	4.4	-0.4	2.10
Extrinsic Motivation – External Regulation – Runners	10.0	4.7	10.9	4.9	+0.9	2.21
Extrinsic Motivation – External Regulation – Walkers	6.7	2.8	7.0	3.5	+0.3	1.87
Amotivation – Runners	4.9	1.7	5.0	2.2	+0.1	1.48
Amotivation – Walkers	4.5	1.4	5.7	2.9	+1.2	1.79

Table 8

F Ratios for the Interaction Effect for the 7 Subscales of the SMS

Subscale	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P Value</i>
Intrinsic Motivation – Stimulation	1	18.7	.035	<i>P</i> = .99
Intrinsic Motivation – Accomplishment	1	0.38	0.1	<i>P</i> = .99
Intrinsic Motivation – to Know	1	3.9	.09	<i>P</i> = .99
Extrinsic Motivation – Identified	1	19.6	.63	<i>P</i> = .99
Extrinsic Motivation – Introjected	1	.2	.006	<i>P</i> = .99
Extrinsic Motivation – External Regulation	1	3.8	.20	<i>P</i> = .99
Amotivation	1	10.0	2.3	<i>P</i> = .10

Hypotheses 2

There is a significant difference in changes in the performance goals between marathon runners and marathon walkers who have trained for and completed a marathon.

The means of subscales comprising the SOQ are presented in table 9 and the interactions which addressed the hypothesis are presented in table 10. A Studentized Range Statistic calculated on these three subscales failed to indicate any difference or change for either group from the pre-test to post-test at the .05 level of possibility (Studentized Range Statistic was 6.2 for “competitiveness” and 2.1 for “goal orientation”.) These data also failed to provide support for the hypothesized changes and therefore, the hypothesis was rejected.

Table 9

Summary Scores Pre-Test and Post-Test for the Runners and Walkers Across the 3Subscales of the SOQ

Subscale	<u>Pre</u> <i>M</i>	<u>Test</u> <i>SD</i>	<u>Post</u> <i>M</i>	<u>Test</u> <i>SD</i>	Δ	<i>SD</i>
Runners Competitiveness	32.3	9.9	33.6	9.3	+1.3	3.05
Walkers Competitiveness	37.8	10.4	34.1	8.9	-3.7	2.98
Runners Win Orientation	18.70	4.8	19.2	5.8	+0.5	2.41
Walkers Win Orientation	21.1	5.5	20.1	6.0	-1.0	2.45
Runners Goal Orientation	9.4	3.1	9.5	3.1	+0.1	1.76
Walkers Goal Orientation	10.7	3.9	9.4	3.5	-1.3	1.87

Table 10

Summary of ANOVAs Statistics for the Interaction of the 3 Subscales of the SOQ

Subscale	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i> <i>Value</i>
Competitiveness	1	178.9	1.92	<i>P</i> =.25
Win Orientation	1	12.5	0.41	<i>P</i> =.99
Goal Orientation	1	13.4	1.21	<i>P</i> =.35

Hypothesis 3

There is no significant difference in changes of self-efficacy between marathon runners and marathon walkers who have trained for and completed a marathon.

The mean scores for the State and Trait Inventory are presented in table 11 The F-ratio for these scales is presented in table 12, The data indicated a trend for all groups to increase from pre-test to post-test, but the magnitude of the change between the groups was not statistically significant at the .05 level. The hypothesis could be accepted.

Table 11

Summary Scores Pre-Test and Post-Test for Runners and Walkers on State and Trait Inventory

Subscale	Pre-Test		Post-Test		Δ	SD
	M	SD	M	SD		
Runners State	65.5	23.6	70.1	24.0	+4.6	4.90
Walkers State	59.2	28.1	61.8	23.2	+2.6	4.82
Runners Trait	62.4	23.3	70.1	18.9	+7.7	4.35
Walkers Trait	64.9	22.2	67.6	24.5	+2.7	4.95

Table 12

An F Test of the Pre-Test and Post-Test Differences for the Runners and Walkers Combined Over the Scales State and Trait Sport Confidence Inventory

Subscale	df	MS	F	P Value
State	1	364.3	0.61	P=.99
Trait	1	761.3	1.58	P=.25

Discussion

Motivation

Though this study failed to produce statistically significant differences in the motivation of marathon runners and marathon walkers a review of the nine subscales of the MOMS reveals a number of trends worthy of discussion.

- “Health Orientation” subscale produced a statistically significant change from pre-test to post-test for marathon runners a positive change in score from 16.3 to 28.4, an increase of 12.1
- May be attributed to the added attention placed on diet, hydration, rest and cross-training that preparation for a marathon demands. Novice marathon runners were found to most often cite health, weight concerns and personal goal achievements as their motivations to train for and run a marathon (Master and Ogles, 1995).
- In contrast, the scores of marathon walkers decreased from 30.4 to 29.8, the change is negligible.
- It is interesting to note that although the runners’ scores increased, and the walkers’ scores decreased, possibly due to the action of training and participation in a marathon, the groups ended with scores differing by only 1.4.
- One may surmise that the action of training and participation in a marathon may have leveled the “playing field” in regard to “Health Orientation”.
- The psychological motives subscales “Life Meaning” scores showed a decrease for marathon walkers’ from 19.6 to 16.1, a drop of 3.5. One explanation for this change could be that the marathon walkers’ population had a *meaningful life* at the start of training and had to *give-up* important components of their lives in

- order to accommodate the demanding training schedule required when preparing for the marathon.
- The achievement motives subscales within the MOMS included “Personal Goal Achievement” and “Competition”. In the subscale of “Competition” the difference was negligible, but in “Personal Goal Achievement” the increase of 5.7 for marathon walkers was very close to significance, significance being 6.54. This outcome points to the concept that marathon takes on the mantle of a personal journey of discovery through endurance.
 - The subscale of social motives marathon runners show an increase in both the “Recognition and “Affiliation” subscales with “Affiliation” climbing 3.7 points. This is in keeping with the analysis of the literature relative to this study that indicated the primary motivators for marathon runners were personal performance and psychological rewards (Masters and Ogles, 1995). As marathon runners gain experience, the initial importance of physical fitness and weight control as motivating factors diminish, while tension reduction, mood elevation, and identity become greater motivators (Johnsgard, 1985).

The SMS was administered to corroborate the findings of the MOMS. Once again the study failed to produce statistically significant differences in the motivation of marathon runners and marathon walkers. And once again the subscales offered some insights into the motivation.

- The only subscale that produced a statistically significant change from pre-test to post-test was “Extrinsic Motivation – Identified” for walkers. The scores moved from 13.5 down to 9.2 a decrease of 4.3 points. The same scores for runners were

relatively stable from pre-test to post-test moving up by only 0.8. This exhibits a trend for the marathon walkers who through the action of training and participation in a marathon may have found the activity to be less important to their development as a person and more about their commitment to endure for a cause.

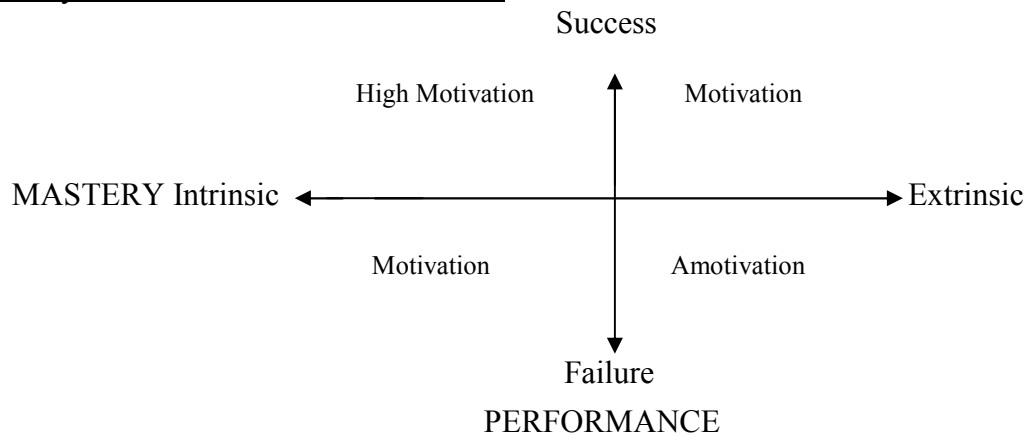
- On the subscale “Amotivation”, the walkers’ scores, increased from pre-test to post-test from 4.5 to 5.7 though not statistically significant it is evident that the walkers’ motivation had decreased. Runners’ scores moved up from 4.9 to 5.0; this is only mentioned to illustrate that “Amotivation” was relatively the same for runners as walkers.

The impact of the marathon does not appear to be differentially impacted by the participants’ status of either runners or walkers and there was no statistically significant difference in motivation between runners and walkers.

Athletes are motivated by either mastery or performance (Roberts, 1984).

Mastery may be considered intrinsic, performance extrinsic. Mastery moves along a continuum of self-perceived competence, from high to low poles (Pelletier, et al., 1995). Performance may be considered on an axis from success to failure, depending on the attainment or lack of attainment of performance goals (Vallerand, & Loisier, 1999). The researcher proposed the Mastery-Performance Axis of Motivation to illustrate this concept (Figure 2).

Figure 2

Mastery-Performance Axis of Motivation

(Lemaire, 2001)

Performance Goals

This study failed to produce statistically significant differences in performance goals of marathon runners and marathon walkers. The SOQ subscales are “Competitiveness”, “Win Orientation” and “Goal Orientation”.

- In each subscale, the runners' scores increased and the walkers' scores decreased pre-test to post-test.
- All of the post-test scores for both runners and walkers are within less than 1 point of one-another.
- The only score that stands out though still well below the 6.2 needed for statistical significance, is “Competitiveness” for the walkers, which moved from 37.8 to 34.1, a decrease of 3.7 points from pre-test to post-test.

- The result may be attributed to the walkers' lack of experience in an endurance event and a reaction to the harsh realities of training and participation in a marathon.

Icek Ajzen (1991) proposed in the theory of planned behavior that intention was fueled by attitude, control and subjective norm, for example, the perceived social pressure to perform. He believed that a positive attitude about the behavior, a feeling that the behavior was within one's ability and an expectation that the actions taken would win social approval, all combined to predict success in the accomplishment of an intended goal.

It is this researchers' opinion that Ajzen's theory explains the success of the TNT program.

Self-efficacy

This study failed to produce statistically significant differences in self-efficacy between marathon runners and marathon walkers. It is interesting to note that all of the SSCI and TSCI scores increased pre-test to post-test, and the increase for runners in both State and Trait were statistically significant. The results seem to support the theory that training and participation in a marathon has a positive effect on self-efficacy. A more stringent study may show significant increases in the effect.

In the researcher's opinion self-efficacy is an integral element of exercise participation and adherence, and believes that assessing components that contribute to increased self-efficacy might offer viable information for increasing exercise participation and adherence. It has been found that the self-efficacy of both marathon

runners and marathon walkers tended to increase through training for and completion of a marathon.

Confounds

There were a number of confounds encountered during the process of implementing this study which should be considered when interpreting these data.

- The data was collected via the Internet, and along with the convenience of this media, came a number of inherent problems.
 - No way of knowing if the psychometric measures were completed by a participant of the prescribed events- unlikely that an individual would go through the trouble of completing the extensive psychometric measures, unless connected with the study -there was no screen of participants that would eliminate that possibility.
 - Inherent limitations of certain Internet Service Providers (ISP).
 - America On Line (AOL) subscribers had trouble either accessing the psychometric measures or in some cases sending the completed psychometric measures- In those cases, the psychometric measures were mailed to the participants to be completed and mailed back.
 - The problems with AOL may have caused a lower rate of participation.
 - A number of participants changed their e-mail addresses during the time-frame of the study.-This was easily remedied by calling those participants to obtain their new e-mail addresses.

- One final possible confound was encountered, the State and Trait Sport Confidence Inventory might have been challenging for a number of the participants to complete.
- This is evidenced by the lack of variety among the answers within an inventory. In other words, it appears that some of the participants chose a single representative number and used it across the board to answer each of the thirteen questions on each inventory.

Importance of the Study

1. This is the first study of marathon walkers.
2. Walker's motivation and self-efficacy tended to be similar to runners' motivation and self-efficacy. These findings may encourage more people to take up walking as their chosen form of exercise.
3. This research may further help legitimize walking as an athletic activity worthy of consideration by anyone electing to become fit.
4. The component competitiveness in performance goals differ between marathon runners and marathon walkers. This knowledge provides a new model for goal setting for future marathon walking participants. The result may be attributed to the walkers' lack of experience in an endurance event and a reaction to the harsh realities of training and participation in a marathon.
5. This study may lead to greater acknowledgement of marathon walkers as athletes in their own right.

6. This study has provided information which may encourage injured runners to replace their running activity when appropriate with less physically-stressful activity of fitness walking.

Implications for Further Research

Because this is the first study of marathon walkers, the opportunity for additional studies are numerous. This study compared marathon runners and marathon walkers. A within-group study of walkers, comparing novice, intermediate and master walkers would add needed depth to the field. A study to compare finishing time and performance goals may help future participants. The current study data represented a select group of walkers who participated in “Team In Training” (TNT) events. Other studies might fruitfully consider using a larger population of walkers, instead of limiting participation to a particular group. It would be interesting to look at participants who walk or run a marathon for a cause and compare them to participants that use marathons as a form of recreation. Finally, a case study of marathon walkers may uncover further items of concerns to investigate. Longitudinal studies of marathon walkers might provide even more insight into their motivation, performance goals and self-efficacy, and the changes in these factors over time. As American adults are dangerously sedentary, as a group, further research in this area may prove life-enhancing as well as life saving for a great number of Americans. Marathon walking has a great deal to offer many people, not only now but in the future.

These data indicated that once a person begins a training program for a marathon they take on an exercisers self-schema and begin to act and think as an athlete. This sets in

motion an important transformation of self that is not easily dismantled. Once the marathoner finishes the marathon it does not matter if he or she ran or walked, only that he or she is now part of an elite group of people who have completed a marathon (approximately 2 percent of the population worldwide has done so). A *finisher* experience generalizes to other endeavors; he or she now has an expanded knowledge of their range of capability. It would be interesting to construct a follow-up study to see if the habits acquired during training for a marathon endured.

Impact on Sport Psychology

This study has highlighted a portion of the endurance sport population that has not yet been studied; the growing trend of ordinary people undertaking extraordinary physical events. For anyone willing to put in the time and effort, marathon walking offers a rite of passage that test one's mettle. Until recently this experience was only available exclusively to elite athletes. Sport psychologists study the elite athletes in order to find keys of motivation or "super adherence" and then extrapolate these findings to the general public. The study of marathon walkers offers a contrast to previous findings about elite athletes' motivation and "super adherence".