

Report for Double Blind Placebo Crossover Human Clinical Study of the Efficacy of the Paradox Griptape in Improving Flexibility, Strength, Balance and Endurance in Healthy Subjects

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Abstract: A human clinical pilot study examined the efficacy of the Paradox Griptape to increase flexibility, strength, balance and endurance in 10 healthy subjects. Results demonstrate that the Paradox Griptape increases performance above placebo tape in fifteen out of sixteen tests of flexibility, balance, strength and endurance. The increases with active Paradox Griptape were as high as 767% higher than placebo tape.

Introduction

Paradox Products, llc (San Diego, CA, <http://www.paradoxformula.com/>) is the creator of Paradox Griptape and Paradox Formula. Paradox Griptape contains unique silicon carbide crystals that have been encoded with Paradox Formula; a quantum grounding technology that has been approved by Grandmaster Yau to properly ground the human chi field.

This double blind crossover placebo controlled study assessed the efficacy of Paradox Griptape in improving flexibility, strength, balance and endurance in 10 healthy subjects.

In this clinical study, the tests conducted included: stretch and reach, hand strength, maximum sit ups in 30 seconds, maximum push ups in 30 seconds, maximum bicep curl weight, maximum bicep curl repetitions and outcome measures with an ergometer bicycle (peak and average power and watts per kilogram, average and peak speed and speed per kilogram, distance and calories. These results demonstrate that the Paradox Griptape improves performance in several different tests of flexibility, strength and endurance in healthy humans.

Methods

Ten healthy individuals (5 male and 5 female) ranging from 17-45 years of age with no history of disease, pregnancy, drug or alcohol use, or on any medications were subjects in this study. All subjects were in good general health and did not have a high level of fitness.

A baseline measurement was conducted utilizing flexibility and balance tests and ten different strength and endurance tests, described below. At the baseline testing, subjects were given either the active or placebo tape to be placed on the bottom of their foot at the second testing.

Subjects were instructed to begin wearing the tape for one hour before testing. They returned after one week (to allow recovery time) for retesting. After the second testing, subjects were given the tape that was not tested at the second visit and asked to begin wearing the tape on the bottom of their foot for one week, at which time they were retested. The tapes were coded so that neither the subject nor the person administering the tests knew which tape was being tested. Half of the subjects wore the placebo tapes first and the other half wore the active tape first to prevent a “learning effect”. The subjects were instructed to refrain from strenuous exercise for 2 days prior to testing.

Flexibility Test

Subjects sat on the floor against a wall with feet against the stretch and reach measuring device (<http://www.fitnessgiant.com/noname16.html>) and reach as far forward as they can. The distance reached was measured three times and the highest value recorded

Balance Test

Participants stood on one foot with eyes closed and arms outstretched. They touched their nose with each index finger. The length of time until their other foot touched the floor was recorded.

Strength Tests

A) Digital Hydraulic Hand Grip Dynamometer

Subjects squeezed the hand grip dynamometer (<http://www.topendsports.com/resources/stores.htm?node=37&cat=Grip%20Strength%20Dynamometers>) as hard as they can in each hand. tested, with the arm at right angles and the elbow by the side of the body. The handle of the dynamometer was adjusted if required - the base should rest on first metacarpal (heel of palm), while the handle should rest on middle of four fingers. The subject squeezed the dynamometer with maximum isometric effort, which is maintained for about 5 seconds. No other body movement is allowed. The subject should be strongly encouraged to give a maximum effort. Two measurements with each hand were recorded and the highest score was recorded.

B) One Repetition Maximum Test to Measure Maximum Strength of the Bicep.

Bicep Curl maximum weight was determined by having the subject perform a bicep curl with a five pound free weight using the dominant arm. The weight was increased by five pounds until the subject could no longer lift the weight with proper form. If the subject was unable to lift the weight, 2.5 pound weights were used as increments to determine the maximum weight that can be lifted and this weight was recorded.

C) Maximum Sit Ups and Push Ups in 30 Seconds

Subjects did as many sit ups as they could in 30 seconds with their feet held down and knees bent. The number was recorded. This was repeated after a 5 minute rest with push ups, either leaning against the wall, on knees or on toes. The same posture was used for all tests and the maximum number performed in 30 seconds was recorded.

D) Five Minute Road Course Ergometer Measurements: Peak Speed, Watts and Peak Speed and Watts per Kilogram

Subjects were asked to pedal on a stationary bike with an ergometer at their peak

performance for five minutes. Peak speed and watts and peak speed and watts per kilogram were recorded.

Endurance

A) Bicep Curl Repetition to Failure

This test was done last to allow recovery time. The dominant arm was used to curl 70% of the maximum weight to failure and this number was recorded.

B) Maximum Sit Ups and Push Ups in 30 Seconds

Subjects did as many sit ups as they could in 30 seconds with their feet held down and knees bent. The number was recorded. This was repeated after a 5 minute rest with push ups, either leaning against the wall, on knees or on toes. The same posture was used for all tests and the maximum number performed in 30 seconds was recorded.

C) Five Minute Road Course Ergometer Measurements: Average Speed and Watts. Average Speed and Watts per Kilogram, Calories and Distance

Subjects were asked to pedal on a stationary bike at their peak performance for five minutes. Distance, average speed, calories and peak watts per kilogram were recorded.

Statistical Methods:

Descriptive statistics were generated to summarize clinical outcomes. Specifically, all outcome measures were summarized in terms of number of means, standard deviations, and ranges (minimum, maximum), stratified by group (placebo vs. active). Absolute changes from baseline were computed for all outcome variables. A paired t-test was used to evaluate changes from baseline within each group. The comparison of changes from baseline between groups was performed using the Grizzle model for cross over studies. A p values are two-tailed and $P < 0.05$ indicates statistical significant differences. Data analysis was performed using SAS[®] version 9.2 software (SAS Corp., Cary, NC). The Grizzle model for 2 X 2 cross over study design was used to evaluate the carry over or learning effect.

Results

Table 1 shows the results for absolute change from baseline for all outcome measures of those wearing the active Paradox Griptape. As shown in Table 1, the active Paradox Griptape produced positive changes from baseline values for all of the outcome measures except maximum bicep curl (no change) and bicep curl maximum weight (-0.2 lbs.). The p-value¹ column shows that the changes were significant (significance lever of $p < 0.05$ or higher) for twelve of the sixteen outcome measures (stretch and reach, balance, maximum sit ups and push ups, average and peak speed, average and peak watts, average and peak watts per kg, calories and distance).

Table 1. Summary statistics for change from baseline for outcome measures for active tape.

Outcome	Mean	SD	Min	Max	p-value¹
Stretch and Reach (inches)	0.25	0.22	0.00	0.66	0.005**
Balance (seconds)	0.82	1.11	-1.14	2.93	0.045*
L Hand Strength	0.80	1.62	-2.00	3.00	0.153
R Hand Strength	1.30	4.45	-10.00	5.00	0.380
Max Sit Ups	0.80	0.79	0.00	2.00	0.011*
Max Push Ups	1.00	0.94	0.00	2.00	0.008*
Max Bicep Curl	0.00	0.00	0.00	0.00	NA
Reps to Failure	-0.20	1.40	-4.00	1.00	0.662
Ave Speed (miles/hr)	0.30	0.16	0.10	0.50	0.001**
Peak Speed (miles/hr)	0.35	0.23	0.10	0.70	0.001**
Ave Watts	4.40	2.99	1.00	9.00	0.001**
Peak Watts	4.60	3.24	2.00	12.00	0.001**
Ave WPKG'	0.12	0.08	0.00	0.30	0.001**
Peak WPKG	0.11	0.07	0.00	0.20	0.002**
Calories	5.10	6.06	1.00	21.00	0.026*
Distance (miles)	0.04	0.02	0.01	0.07	0.001**

p-value¹ p-value for evaluating changes from baseline within active group

* p<0.05

** p<0.01

Definition of statistical term in tables:

Mean=average values for all subjects

SD-Standard Deviation, how much the data varies from the mean (average of all the data)

Min-minimum or lowest value

Max-maximum or highest value

p-value-the probability that the data is different than the comparison (baseline) value. A p-value of less than 0.05 indicates that the data is significantly different from the comparison measure. The lower the p-value, the more different the test value is from the comparison test value.

In contrast, Table 2 shows that for the placebo tape there were decreases from baseline for three of the performance measures (right hand strength, maximum sit ups and push ups) and no change for maximum bicep curls. Four of the tests demonstrated a significantly different increase from baseline (balance, average speed, average watts, distance and calories).

The p-value² column shows that the changes were significant between the active and placebo tape for eight of the outcome measures (balance, bicep curl repetitions to failure, average and peak speed, average and peak watts per kilogram and distance). Most of the measures had a higher level of significance for the difference between active and placebo.

Table 2. Summary statistics for change from baseline for outcome measures with the placebo tape.

Outcome	Mean	SD	Min	Max	p-value ¹	p-value ²
Stretch and Reach	0.14	0.22	-0.08	0.66	0.071	0.035*
Balance	0.87	0.87	-0.13	2.69	0.011	0.720
Left Hand Strength	0.30	1.06	-2.00	1.00	0.394	0.180
Right Hand Strength	-0.70	3.56	-9.00	3.00	0.550	0.067
Max Sit Ups	-1.10	3.18	-10.00	1.00	0.302	0.110
Max Push Ups	-0.60	3.72	-11.00	2.00	0.622	0.227
Max Bicep Curl	0.00	NA	0.00	0.00	NA	NA
Reps to Failure	0.00	0.67	-1.00	1.00	1.000	0.535
Average Speed	0.09	0.12	-0.10	0.20	0.041	0.001**
Peak Speed	0.07	0.14	-0.10	0.40	0.153	0.005**
Average Watts	1.40	1.71	0.00	5.00	0.029	0.001**
Peak Watts	0.60	3.50	-3.00	8.00	0.601	0.001**
Average WPKG	0.03	0.05	0.00	0.10	0.081	0.003**
Peak WPKG	0.01	0.07	-0.10	0.10	0.641	<0.001**
Calories	1.10	1.10	-1.00	3.00	0.012	0.098
Distance	0.01	0.02	-0.01	0.04	0.021	0.003**

p-value¹ p-value for evaluating changes from baseline within placebo group

p-value² p-value for comparison of changes from baseline between placebo tape vs. active tape

* p<0.05

** p<0.01

Learning Effect and Proper Randomization of Groups

There is no evidence for “carryover effect”, which occurs when learning occurs as a result of repeating the tests. Table 3 shows the comparison of absolute changes from baseline between active and placebo groups. No significant carry-over effects were observed except for right hand strength (p=0.006) and average WPKG (p=0.027).

Table 3. Comparison of Absolute Changes from Baseline between Active and Placebo Tape.

Outcome	p-value for carry-over effect
Stretch and Reach	0.648
Balance	0.504
L Hand Strength	0.484
R Hand Strength	0.006*
Max Sit Ups	0.319
Max Push Ups	0.117
Max Bicep Curl	NA
Reps to Failure	0.929
Ave Speed	0.484
Peak Speed	0.302
Ave Watts	0.087
Peak Watts	0.627
Ave WPKG	0.027*
Peak WPKG	0.198
Calories	0.861
Distance	0.671

p-value¹ p-value for evaluating carry-over effect (active tape followed by placebo tape versus placebo tape followed by active tape)

* p<0.05

Table 4 shows that there were no differences between baseline measures for active and placebo groups, demonstrating that the groups were properly randomized.

Table 4. Comparison of outcome measures at baseline between subjects who were randomized to the Active-Placebo sequence vs. Placebo-Active

Outcome Measure	A-B Sequence (N=6)				B-A Sequence (N=4)				p-value
	Mean	SD	Min	Max	Mean	SD	Min	Max	
Stretch and Reach	11.52	1.67	9.25	14.17	10.75	0.91	10.00	11.83	0.432
Balance	7.97	6.60	3.40	16.62	2.40	1.39	1.20	3.75	0.141
L Hand Strength	60.33	16.22	44.00	88.00	85.75	21.27	55.00	100.00	0.063
R Hand Strength	64.17	22.21	36.00	100.00	96.75	26.55	60.00	121.00	0.068
Max Sit Ups	20.83	9.93	10.00	38.00	32.25	11.90	16.00	44.00	0.137
Max Push Ups	23.33	9.56	13.00	39.00	39.25	14.20	21.00	51.00	0.065
Max Bicep Curl	25.00	7.07	15.00	35.00	38.75	16.52	15.00	50.00	0.103
Reps to Failure	16.50	3.62	10.00	20.00	18.00	4.55	12.00	23.00	0.577
Ave Speed	13.08	1.85	11.10	15.90	15.50	3.57	10.20	17.80	0.192
Peak Speed	14.27	1.74	12.20	16.70	16.98	4.05	11.00	19.90	0.177
Ave Watts	95.50	14.28	74.00	111.00	120.00	33.64	74.00	154.00	0.145
Peak Watts	117.83	13.53	96.00	136.00	142.50	39.07	86.00	176.00	0.183
Ave WPKG	1.15	0.45	0.70	1.80	1.73	0.71	0.70	2.30	0.153
Peak WPKG	1.55	0.60	0.90	2.50	2.55	1.31	0.90	3.60	0.134
Calories	29.67	7.50	19.00	40.00	39.25	14.77	20.00	56.00	0.207
Distance	1.00	0.09	0.90	1.11	1.11	0.16	0.88	1.23	0.221

Discussion

Results of this double blind crossover pilot study demonstrate that the Paradox Griptape produces positive changes from baseline values for all of the outcome measures except maximum bicep curl (no change) and bicep curl maximum weight (-0.2 lbs.). The p-value¹ column shows that the changes were significant (p<0.05 or <0.01) for twelve of the sixteen outcome measures (stretch and reach, balance, maximum sit ups and push ups, average and peak speed, average and peak watts, average and peak watts per kg, calories and distance).

Conversely, for the placebo tape there were decreases from baseline for three of the performance measures (right hand strength, maximum sit ups and push ups) and no change for maximum bicep curls. Four of the tests demonstrated a significantly different increase from baseline (balance, average speed, average watts, distance and calories).

The active Paradox Griptape produced greater increases from baseline than placebo in 15 out of 16 of the tests. The increases from baseline for the active tape were as high as 767% larger than the changes for placebo tape (peak watts).

The changes were significant between the active and placebo tape for eight of the outcome measures (balance, bicep curl repetitions to failure, average and peak speed, average and peak watts per kilogram and distance. Six of the measures had a higher level of significance for the difference between active and placebo.

This is a pilot study with a small sample size. A larger study would likely show greater improvements with the active tape.

Although the absolute changes seem small for some of these tests, they are significant changes, especially when one takes into account the importance of lifting a weight that is only a few pounds heavier. The same conclusion is true for the stretch and reach test, using distance as the endpoint rather than weight lifted.

Factors that can influence the outcome were analyzed and found to have no effects on the outcomes. All of the subjects were properly randomized, as shown by the lack of difference between baseline measures between the active and placebo groups. Additionally, there was no “learning effect” (that can occur as a result of repeating a test, regardless of the length of the washout period).

The tests utilized in this pilot study are objective measures of flexibility, balance, strength and endurance that are used in standard athletic testing. They are academically credible and superior to applied kinesiology tests that are commonly used to demonstrate the efficacy of products that increase athletic performance.

Conclusions

This double blind crossover clinical trial shows that the Paradox Griptape produces a significant increase in twelve tests of flexibility, balance, strength and endurance in 10 healthy humans when worn for one hour prior to testing. More importantly, the Paradox Griptape outperforms the placebo tape in fifteen out of sixteen of the tests conducted. These increases were as high as 767% greater than measurements done with placebo tape.

It is likely that more increases will be seen when a person is on the tape for more than one hour. Furthermore, a larger study will also likely produce greater outcomes for the active Paradox Griptape.

Research Team

Research was conducted by Lisa Tully, PhD, owner of Energy Medicine Research Institute and Ryan Shilling, owner of Watts Up. Both companies are based in Boulder, Colorado.

Dr. Lisa Tully received her PhD in Pharmacology and Toxicology from the Indiana University School of Medicine. Dr. Tully has several publications in peer-reviewed medical journals and has presented her research at international scientific conferences. Following

her postdoctoral fellowship, Dr. Tully shifted from academic medical research to pursuits in integrative medicine and has attended many international medical conferences over the past decade, evaluating low cost and effective health care.

Dr. Tully is currently on the Scientific Advisory Board of several companies and non-profit organizations and is founder of the Energy Medicine Research Institute, whose mission is to assess the efficacy of vibrational medicine technologies and therapies.

Ryan Shilling, owner of Watts Up, a company that specializes in athletic training, has professionally tested athletes for a decade. He has performed testing for Athletic Republic, a company that trains athletes. He has conducted field tests on athletes specific to running and cycling. He specializes in testing athletes for strength, flexibility and endurance for training purposes.