Rolfing and Running

Owen Marcus, M.A

Forward

Last year Owen Marcus, the Rolf Institute, and Arizona State University initiated a study of the effects of Rolfing on running economy and running mechanics. The subjects were members of the ASU running team. The research was carried out by a graduate student, James A. Walker, M.S. under the direction of Dr. Christine Wells. The Spring 1989 issue of Rolf Lines carried a summary of the study written by Walker and Wells at Owen's request.

Some members of the Institute were disappointed with the results of the study because no statistical differences were noted between the Rolfed and control subjects. On the other hand, the Rolf Institute Research Committee was encouraged by the results because much information was obtained that will be invaluable in our future investigations.

Like any serious research endeavor, our inquiry into Rolfing must begin with what scientists call a "stamp collecting" phase. In this phase, we try some of the obvious and standard measurement techniques to see what we can learn about the subject of interest. We initiate these studies in full anticipation of demonstrating dramatic results, yet the seasoned scientist knows at the outset that there may be disappointment at first; that the measures used may not have been the optimal choices; that there may be another way to pose the question.

One comment I have heard repeatedly is that the Institute's Research Committee failed to properly monitor the project and that our funding should have been withdrawn when it was realized that the anticipated results were not being obtained. This attitude is inappropriate. It would unethical to withdraw committed support for a graduate student's project because we did not like the results. Not only would this be devastating to our relationship with the university, but it would establish that the Rolf Institute is unwilling to carry out objective research. In this study, as in all other research, we must be willing to work with the outcome, regardless of whether it suits our interests. When a Rolfer works with a client, things do not always turn out the way you expect, and you learn from the experience. So it is with research.

Owen Marcus has written the following valuable summary of how he sees the results of the running project from his perspective as a Rolfer. His comments deserve careful thought and study as we formulate future research projects. In particular, we must think carefully about the paradox of using standard reductionist measurements to document a whole-system change.

-James Oschman, Ph.D.

Quote from the abstract entitled "The Effects of Rolfing on Running Economy and Running Mechanics in Well-Trained Male Distance Runners" by James A. Walker, M.S.:

The results showed no significant difference attributable to Rolfing (p.05), indicating no effect of Rolfing on RE (running economy), running mechanics, perception of effort, or general flexibility. However, RG (Rolfed Group) subjects reported receiving positive benefits from Rolfing including relief from chronic injury and greater body awareness which they expressed as enhancing their running.

Additionally Jim Walker added that the size of the groups, 6, may have been too small to measure any significant change.

A Rolfer's observation of the results:

1. Jim speculated that the steady-state test velocities were too slow for the elite runners tested. These runners are used to running at a higher speed, and the speed of the treadmill may have been set too low, thereby causing the runners not to run at their best level of economy. The tests were not pushing them, nor maybe allowing them to take their full stride.

The diversity of the test-subject pool may have also affected the results according to Jim.

2. It may be assumed that slower runners would manifest more changes from Rolfing, if only due to the fact they have more injuries. Traditionally, it is difficult to show improvements when testing elite athletes.

3. The physiological measure of running economy measured by the VO2 max and submax are seen to be more a function of heredity and endurance training. Yet if the biomechanical restrictions are removed, improvement may be seen.

4. The first biomechanical measure, step length (SL), the distance between two successive footstrikes or stride length, was expected to show an improvement.

But what is not taken into account is the quality of the SL. Elite long- distance runners often have long stride length, yet their relative body position, i.e. their relationship to gravity is not the most efficient.

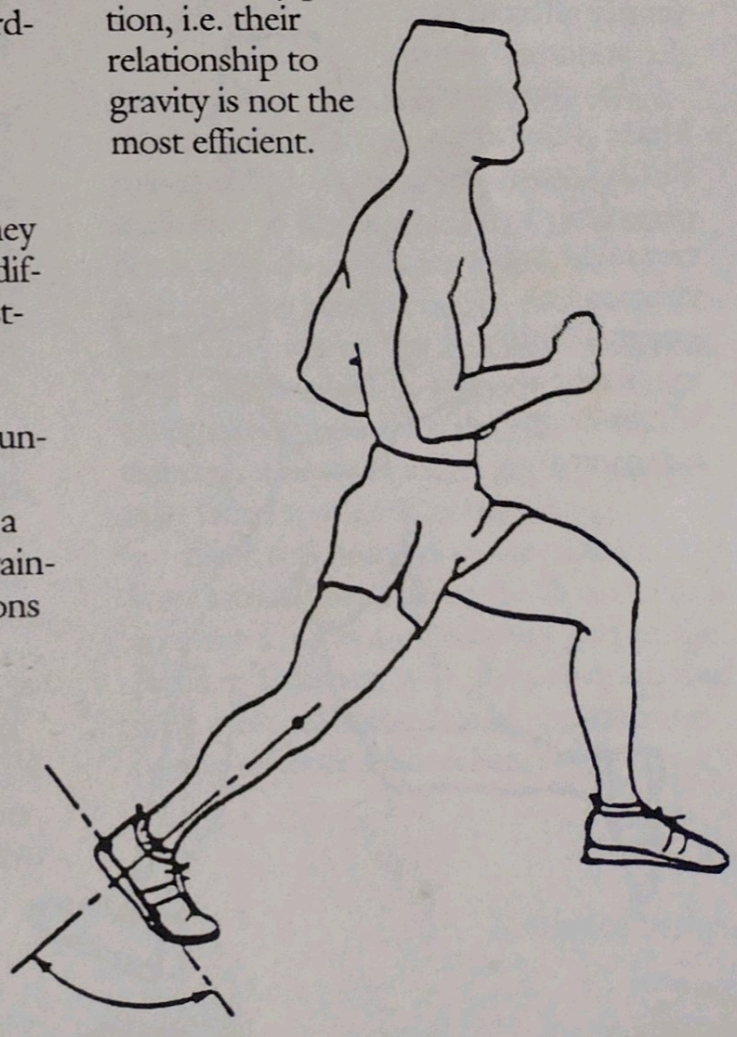

Figure 1. Maximal plantar flexion angle.

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a continuation

All the runners I have ever Rolfed run with their center of gravity behind the midline, even the Olympic runners. So with this measure, all we observed was the SL, a linear measurement of what is left on the ground. The whole body's relationship to the ground was never measured. In all these three biomechanical measures, it is assumed that the most important aspect of running performance relative to biomechanics is the foot's relationship to the ground.

5. The second biomechanical measure, maximal plantar flexion angle (PFLEX), is the maximal angle formed by plantar flexion at the line drawn up through the lower leg and the plantar surface of the foot. Again, we see focus on the foot and the ground. Yet even so, we would think we would see improvement. I propose we did not for a few reasons. The first being what Jim mentioned in his abstract about the speed of the test being too slow to allow the runners to fully utilize their bodies.

The second reason akin to Jim's consideration is that running on a treadmill is not a natural surface. Yes, all three groups were tested under the same conditions, but possibly the RG was more adversely affected by the unnatural set-up.

Another thought I have is that the PFLEX would not necessarily increase during running because of Rolfing. Being a whole-body reorganization, the Rolfing may have caused other segments of the body to shift or increase range of motion.

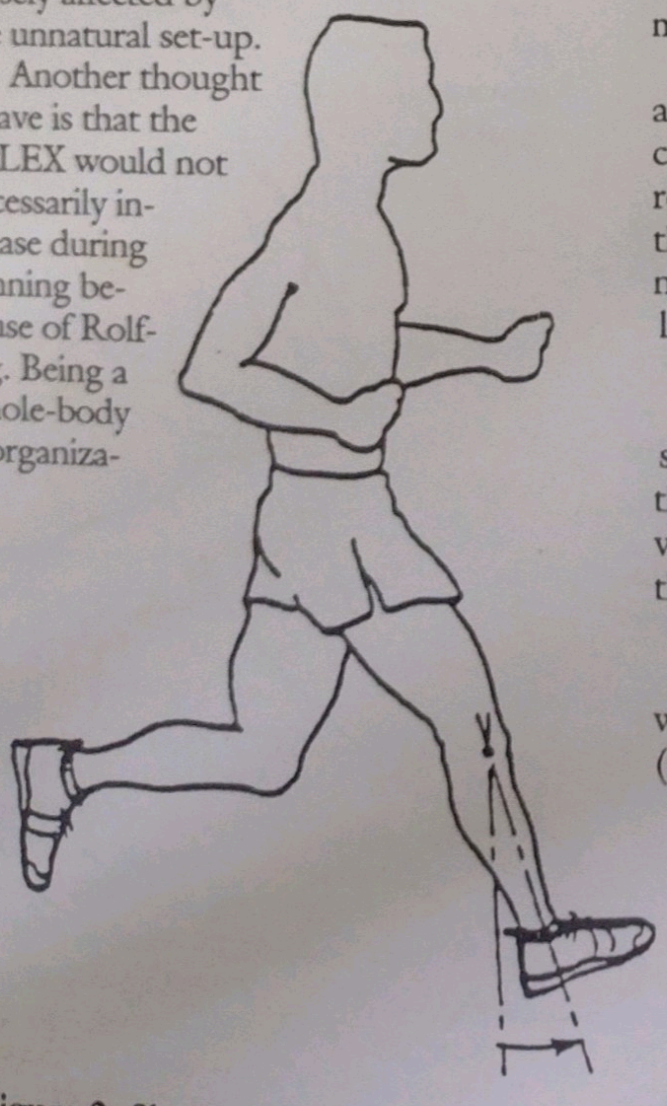

Figure 2. Shank angle at foot-contact.

Possibly the femur-pelvic angle could show the increase. When you think about it, you would imagine the body would create the shift where it would get the largest benefit. With the leg initiating its movement from the back (LDH) or at least the pelvis, more distance would be created from an increase in this arc than the ankle arc. We all know that the range of the hip is much greater than the ankle, so should the proportional gain be more.

A fourth thought of mine has to do with the relative body position. From my experience of Rolfing runners, I notice they all over-rely on their lower leg to do the work and not the large muscles of the upper leg. This is much of the reason we see so many shin splints, stress fractures, and plantar fascitis.

This is brought on by the runner's weight being behind the midline. When this occurs, the leg is not able to fully extend. The angle between the lower and upper leg is smaller than its potential. All this causes the foot and the ankle to assume more than their fair share of the work. So when a gain in performance is made through Rolfing, it is possibly being made not at the ankle but a gain at the hip and additionally at the knee with the full extension of the leg.

A corollary of the previous thought is that we may see the angle remain the same in the ankle, but the quality of the movement through the joint may improve.

The power certainly improves. With all the runners I have Rolfed, the muscle compartments of the lower leg were restricted from the fascial adhesions. Once the restrictions were released, every runner reported more power from their lower legs.

6. The third biomechanical measure, shank angle at foot contact (SANG), is the angle formed by the lower leg and the vertical at footstrike. All my thoughts of the previous measure apply here.

7. It was speculated that Rolfing would created greater range of motion (ROM) at the ankle and knee, representing the possibility of improving the recoil effect of the soleus and gastrocnemius muscles along with the achilles tendon.

From my personal observations of Rolfed runners supported by their experience, this occurs; but how can we show it? Measuring PFLEX and SANG did not show it.

Again, I suspect we are seeing an intrinsic improvement, not a quantitative improvement measured by the standard measuring procedures.

8. A general observation is that the traditional view of biomechanics has been reductionistic and mechanistic. To measure performance in the biomechanical arena with only considering specific body segments is limited. Again, we may be up against a round peg attempting to fit into a square hole. How do we measure something that does not fully exist in a paradigm which is the standard for evaluation?

9. Other things worth noting: Two of the subjects were qualified for the Olympic trials for the marathon before the study began.

Many of the runners in the other groups after the study started wanted to be Rolfed.

Jeffrey Maitland, Ph.D. Rolfed two of the six subjects.

Jim Walker has now started his Ph.D. program at the University of Utah. It is his hope that he will do his dissertation on Rolfing. I would like to see this happen. Learning from this study, I believe we can create a successful study.

It may be appropriate to have other Rolfers review this study for possible suggestions on what to do differently next time. Two specific groups, I would suggest would be the (Institute's) Research Committee and teaching faculty.

I wish to thank the Rolf Institute and particularly the Research Committee for their complete support, without which this study would not have been possible.

Scott Spann deserves special mention for his support and valuable assistance throughout the entire project.

An exceptional effort was given by Pat Carusone, our Office Manager (at Owen Marcus & Associates, Inc.). Pat made sure all the many details were handled, and she was the one everyone spoke to. Pat coordinated not only the Rolf Group subjects, but also the massage group which used our office.

And finally Jim Walker and the rest of the people at Arizona State University were always helpful. They want to do more studies with us in the future.

James L. Oschman, Ph.D. is Chairman of the Rolf Institute's Research Committee.

Owen Marcus is CEO of Owen Marcus & Associates, Inc. in Scottsdale, Arizona.