HUMAN SUBJECT EFFECTS ON TORSION PENDULUM OSCILLATIONS: IMPORTANCE OF ESTABLISHING THE CONTRIBUTION OF THERMAL CONVECTION AIR CURRENTS

Dear Editors:

The effects exerted by human subjects seated beneath a hemispherical steel-mesh torsion pendulum suggest the possibility of a bioenergy field.[1,2] An alternate interpretation is that the effects are a consequence of simple thermal convection currents that are generated by the warm body of a subject. If simple thermal convection currents are responsible, then the subject effects are of modest interest. Conversely, if thermal convection currents cannot account for the effects, then the origin and nature of the subject effects have much greater interest. It is accordingly important to unambiguously distinguish between the contributions of thermal convection currents on the pendulum, and effects that cannot be attributed to thermal convection currents.

The article by Hammerschlag and Baldwin[3] (H/B) is an attempt toward this goal. It uses a simple heated mattress pad that is folded in the shape of a human subject on a chair underneath the pendulum. When the pad is on, it generates thermal convection currents that can be detected by the pendulum. These thermal convection current effects were analyzed in comparison to the effects exerted by a human subject.

The validity of these experiments and the interpretations of the results rest on the suitability of the heated mattress pad as a thermal surrogate for a human subject. Since the temperature of a human subject is 37°C, then any surrogate would have to be maintained at a constant 37°C at all times. Prior to using the mattress pad, it would need to be thoroughly characterized with respect to its temperature/thermal characteristics, with emphasis on demonstrating that the mattress pad can maintain a consistent 37°C temperature at all times everywhere within and throughout the pad. Moreover, it must be demonstrated that the mattress pad maintains this 37°C temperature throughout all experiments.

Despite the importance of this, it is noted that nowhere in the H/B article is there any mention of examining the thermal characteristics of the pad in any way whatsoever. There is no mention of the temperature of the mattress pad during the experiments; other than it is either turned on, or turned off. Despite this, the H/B article uses the results obtained with this uncharacterized mattress pad to argue that the subject effects are all due to thermal convection currents. Such a conclusion would be justifiable only if the mattress pad had been thoroughly characterized, and its suitability as a subject surrogate had been convincingly established.

Since H/B presented no characterization information, this article presents some relevant experimental results. A mattress pad identical to the one used in,[3] was obtained from Amazon (Biddeford Heated Mattress Pad, White, Twin), and its thermal characteristics were studied. A warning accompanying the pad cautioned against using it with comatose persons, since severe burns could result; suggesting that temperatures far above a 37°C body temperature were possible.

An experiment was performed to establish the extent of this possibility. The pad was folded in the way shown in the H/B article, and a thermal probe was inserted into the folds corresponding to the head of the subject. The pad was switched on, and the temperature was recorded. The result is as shown in Figure 1.

It shows that the temperature of the pad rapidly rose to 53°C, which is 127.4°F. This temperature is "scalding hot" which can cause severe skin burns. Since the folded pad has many folds throughout, these same high temperatures reside everywhere throughout the folded pad, and hot air currents would spill out everywhere. When they do, they would cause thermal convection currents that are much more active and intense than anything that would be produced by a subject at a constant 37°C. Experiments measuring the effects of these air currents cannot reasonably claim that they are relevant to the convection currents produced by a human subject. Since the experimental design is severely flawed, the results and their interpretations are equally flawed. Most important is that the claim that the experimental results show that subject effects on the pendulum are due to thermal convection currents must be rejected, because they are not supported by the experiments employed.

Despite the inadequate experimental design of the H/B article, it does point toward the importance of performing experiments that can unambiguously distinguish between subject effects as a result of heat-induced convection currents, and subject effects that cannot be explained by heat-induced convection currents. To achieve this will require experiments that are carefully designed, and the results thoughtfully interpreted.

Experiments are now in progress that can resolve these questions, to be published when they have been completed. Especially important will be the study of a variety of heat sources in an attempt to mimic the thermal characteristics of a human subject as suitably as possible. Whereas a heated mattress pad is shown to be unsuitable as a subject surrogate, many other heat sources are possible, and they will be explored.

These experiments are focused on two aspects.

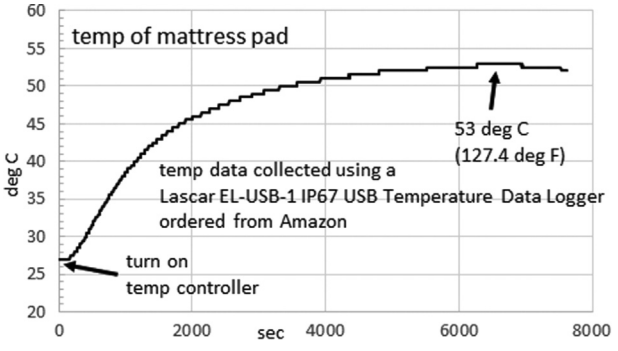

Figure 1. Time course of temperature increase of pad.

1. Careful characterization of heat sources chosen to mimic the thermal qualities of a human subject as closely as possible. Study the effects of these heat sources on the motions of the pendulum. Compare and contrast these heat source effects with the effects exerted by subjects on the pendulum. The comparison will be performed using advanced digital signal analysis, and other methods. Attention will focus on subject effects that are dramatically different from the effects of heat sources.
2. Analysis of results using human subjects that show subject effects that seem nearly impossible to be mimicked by thermal convection currents.

An example, obtained from hundreds of experiments; is that a subject can deflect the center of oscillation of the pendulum by as much as 4°–7°,[1,2] and this deflection can persist for 20–30 min. No heat source tested up to now can achieve deflection of the pendulum for any significant period of time, and may represent an effect that cannot be mimicked by thermal convection currents; and therefore must be an effect that is exerted by something else.

An example is results obtained with a subject who transitioned from one mental state to another, between two sequential experimental runs. During the first run, the subject was asked to attain a "normal cognitive state." During the second run, the subject was asked to enter into his highly-practiced meditative state. The subject effects during the sequential runs were dramatically different, indicating that the mental state of the subject can dramatically alter the subject's effect on the pendulum. It will be hard to argue that thermal convection currents can account for these differences.

It is unrealistic to expect any single experiment to decisively adjudicate between subject effects being caused by simple thermal convection currents, and effects that cannot be attributed to convection currents. Indeed, it will require many experiments; and it will be their collective effect that will be determinative.

REFERENCES

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