RUNNING AND GROUP DYNAMICS AS TREATMENTS FOR PSYCHOPATHOLOGY

Margarita GoSingco-Holmes
Ateneo de Manila University

The purpose of this study was to examine the effects of running vis a vis group dynamics as treatments for psychopathology among patients in a neuropsychiatric hospital ward. Forty-seven males participated in a 2 x 2 factorial experiment with running and group dynamics as the two treatment variables. Running led to increases in physical fitness and self concept. On a mental status examination, there were positive main effects for both treatments as well as an interaction effect. The original hypothesis that running and group dynamics would both lead to enhanced mental health was premised on a theory that viewed man as a unity of body-mind rather than on the traditional Cartesian belief that man is a separation of body and mind.

The therapeutic effects of physical activity have been recognized for centuries and the use of running in psychotherapy has been drawing great interest over the past 10 years. Two separated but related events in recent years appear to have set the stage for viewing physical exercise as a form of psychotherapy.

The first is the resurgence of interest in a psychobiological or mind-body perspective (Bakal, 1979; Morgan, 1974, 1968) which emphasizes the interdependence and interrelationship between the different functions of the human system rather than their independence from each other.

The second is the "aerobics explosion" that has prompted increasing numbers of people to take to the courts and the streets to improve their general health and physical fitness. As more and more people started to jog, these joggers claimed mental or psychological benefits over and above the physical ones their exercise of choice. Many joggers claimed an increase in self-esteem, a decrease in anxiety and depression, a general sense of well-being and ego satisfaction as an aftermaths of running. (Carter, 1977; Folkins, 1976; Folkins & Sime, 1981; Sachs, 1982). Surveys show that many white collar workers find, in jogging, the kind of independence and self-fulfillment that their work is unable to provide (Moskovites, 1984).

Might jogging therefore be an effective way of helping psychologically disturbed persons? Could jogging be as effective as a traditional mode of psychological intervention; like, for example, group dynamics? This study was designed to discover the effects of running on a clinical population. It is our hypothesis that running will improve both the physical and psychological health of psychiatric patients.

METHOD

The experiment utilized a 2 x 2 factorial design resulting in four treatment conditions designed to evaluate the effect of running therapy and group dynamics on a clinical population. The first factor was the presence versus absence of running therapy among the subjects. The second factor was the presence versus absence of group dynamics among the subjects. Running therapy was operationally defined as running for 20 minutes three times a week for six weeks. Group therapy was operationally defined as one hour of group dynamics once a week for six weeks. The placebo group, which was exposed to neither group nor running therapy, listened to classical music for 20 minutes three times a week for six weeks. This was called the Music Therapy group. The same experimenter led all four groups in an attempt to control for extraneous variables like ex-

perimenter effect, an activity each subject was expected to join, time spent in the therapy, and group support. Each group was called a therapy group to control for expectation of wellness.

The dependent variables were the change between pretest and posttest scores on one physical measure and on two psychological measures.

Subjects

The Armed Forces of the Philippines Medical Center located on V. Luna Road is the biggest Philippine Military Hospital in the Philippines and the only one with a fully functioning Neuropsychiatric Unit. The Neuropsychiatric Ward is composed of three Wards; Wards 23, 24, and 25. Ward 24 is the "open ward." Here, the patients are diagnosed to have psychiatric problems but their medication is limited to a few miligrams of tranquilizers. Neither are they considered to be security risks to themselves or others.

The subject pool had several noteworthy characteristics. It was a relatively large sample of clinical subjects (N=47) compared to most running studies that have a clinical sample of no more than 10. Also, there was a complete randomization of subjects among different treatment conditions whereas similar studies usually employ self-selected subjects. Finally, there were no dropouts in the group.

The subjects of this study were 47 enlisted men who were inmates of Ward 24. Their ages ranged from 20 to 41 years old, with a mean age of 28.28 years (sd = 5.54 years). The branches of the military they belonged to were: Philippine Army (N=33); Philippine Constabulary (N=7); Philippine Navy (N=5) and Philippine Air Force (N=2). There were eight sergeants among the 47 patients. The subjects were randomly assigned to the four treatment groups by picking names from a hat.

Group A was the group exposed to both treatment conditions: Running Therapy and Group Therapy; Group B, to Running Therapy alone; Group C, to Group Dynamics alone; and Group D, placebo group, to neither therapy though they were told that they were undergoing music therapy.

Procedure

The experiment proper lasted a total of 6 weeks. Before that, there was a 10-day period for the pretest; and after that there was a 6-day period for the posttests. One measure, the Sachs Sentence Completion Test, is routinely administered to all patients in the ward some time after admission. The other pretests were given after the Ss were randomly assigned to groups. The pretest Fitness Test was administered by the experimenter. The pretest MSE was administered individually by the three psychiatrists. The posttests were group administered by the same experimenter. The posttest MSE was administered by the same three psychiatrists who had done the pretests.

Every Tuesday, Wednesday, and Thursday, at 5:00 a.m., the experimenter would wake up the entire Ward 24. There would be a 10-minute warm-up stretch for everyone. Then, experimenter would run with Groups A and B for 20 minutes. They were told to try and keep up with the group; but that it was all right if they could not. What was really important was that they walked or ran for at least 20 minutes and worked up a sweat. The experimenter would lead the group for the first 5 minutes, then, go behind to give moral support to the slower ones and also to ensure that all 24 runners stayed with the group until the 20 minutes were up. Those who did not belong to the group were asked not to run at the same time as the group did. After the run, the subjects were asked to cool down by walking for another five minutes.

Those in Group therapy met every Thursday afternoon; Group A met from 2:00-3:00 p.m. and Group C from 3:00-4:00 p.m. The ground rules established on the first day were: No one was allowed to leave the room during the session, no one would be forced to participate in the group dynamics exercises but they were encouraged to,

Strict confidentiality, No blaming or teasing, "Walang kantiyawan."

The Music Therapy group, Group D, met in a private room every Tuesday, Wednesday, and Friday from 6:00-6:20 a.m. to listen to classical music. They were given permission to read, write, eat, sleep, and smoke when they so requested; the only stipulation that they be physically present for those 20 minutes.

Attendance was taken before every Running, Music, or Group Therapy session. It was explained to the groups that while being part of this therapy program was strictly voluntary, to remain in the program meant obeying the strict attendance requirement. This was: No one could be absent more than once a week for the running and music therapy groups. For the group dynamics, no one could be absent more than twice for the entire experimental period. Anyone who was late (not in yet when his name was called) twice was considered absent. The experimenter made it a point to talk to each S the very day he was absent or late to let him know he was important enough to be missed, thus, encouraging him to attend the next session on time.

As a result, no one dropped out of the program because of lack of attendance. There were times, however, that some soldiers were sent to Ward 25 as punishment for some transgression like drinking, fighting, keeping the other soldiers from sleeping, etc. When in Ward 25, their absences were not counted against them.

Care was taken to treat all groups equally except for the experimental variables. When shoes were given to some of those in the Running Group that did not have adequate shoes for the run, an equal number of pairs were given to Groups C and D so that there would be no feeling of favoritism or resentment at not being favorites among the subjects. Those that did not get shoes were given T-shirts or shorts. All the give-aways were second hand items in good condition.

The experiment was originally meant to last eight weeks, but because Ward 24 was getting so crowded and complaints were starting to surface because of this, the experiment was shortened to six weeks.

The Ss were posttested on the three measures as soon as the six week experimental period was up.

Measures

Fitness Measure. This was determined by asking subjects to walk/run a fixed distance (2 km) as fast as they could. The number of seconds it took them to complete the 2 km is their pretest/posttest score. The lower the score, the more fit the subject is. The final fitness score is the change between pretest and posttest measures, calculated by subtracting the posttest from the pretest. Note that this produces change scores wherein the bigger the numerical value, the greater the improvement signified.

Sachs Sentence Completion Test (SSCT). This is a bilingual projective test composed of 60 sentence stems that the subject is asked to complete. It measures 15 subscales; although in this experiment we focused only on those under the area of self concept: (1) Fears, (2) Guilt Feelings, (3) Abilities, (4) Past, (5) Future, and (6) Goals and Ambitions.

The SSCT is administered routinely to every patient of Ward 24 not more than 60 days and not less than 14 days upon admission to the Ward. The posttest was given to the four treatment groups, group by group, within a week after the experiment ended. Both the pretest and the posttest were rated independently by three graduate students who were familiar with the SSCT. Each of the 30 sentences related to self-concept were rated by each judge as O (no disturbance at all); 1 (signs of slight disturbance or abnormality); or 2 (severe disturbance). The sentences were grouped according to subscale (5 statements per subscale) and the mean of each subscale taken. Thus, each subject had 6 scores for the pretest and 6 scores for the posttest. An average of the ratings of the three raters per

subscale of the subjects were used as the pretest and the posttest scores of the subjects. The final SSCT scores were the change between each of the subscale scores, obtained by subtracting the posttest from the pretest. Again, the bigger the change score, the more the improvement.

Pretest inter-rater reliability was obtained by computing Pearson correlations among the three raters taken by pairs. The average correlation among the three pairs was .94.

Mental Status Exam (MSE). This is a quantified version of a qualitative report the intern-in-charge makes upon admission of every patient in the psychiatric unit of a hospital. Ideally, it classifies and describes all the areas and components of mental functioning that are involved in modern diagnostic classification. This includes ten general areas: (a) general appearance, behavior, and attitude; (b) mood, feelings, and affect; (c) perception; (d) thought process; (e) consciousness; (f) orientation; (g) memory; (h) impulse control; (i) judgment; (j) insight; and (k) reliability.

In order to obtain a more robust measure, it was decided that only the three senior psychiatrists (with the exception of the officer-in-charge of Ward 24) be allowed to do the ratings on the Ss. None of the raters knew the hypotheses of the experiment nor the groups to which the subjects belonged. These three raters were chosen because, with the exception of the OIC, they were the most senior, were all members of the military in addition to being psychiatrists, had the commitment to helping the experimenter, would be present for both the pretest and the posttest, and had the necessary experience and ability to deal with a quantified version of the MSE.

There were nine possible ratings for each of the 10 general areas of mental functioning; with a rating of one considered the most healthy and a rating of nine considered the most psychologically disturbed. The pretest/posttest score was an average of these 10 ratings and ranged from 1 to 9; the lower the score, the more psychologically healthy the subject was. The final MSE score was the change between pretest and posttest scores, obtained by subtracting the posttest from the pretest. Again, the bigger the change score, the more improvement.

RESULTS

Fitness Measure. A two-way anova was used to determine the effect of running therapy and/or group dynamics on the change in fitness scores among the 47 subjects. Table 1 shows a significant main effect for Variable A, which is running therapy.

The main effect reflected a significant improvement in fitness for the running therapy groups. The mean for the running group was 284.795 seconds and the mean for the non-running group was 221.85 seconds. This finding should come as no surprise since the physiological benefits of running has been documented many times. These benefits include improved functioning of the lungs and heart, improved endurance and work capacity, improved efficiency of blood circulation and oxygen consumption, improved metabolism, and the decline in disease and deterioration of body systems. All these benefits contribute to the "training effect" exercise physiologists have discovered. When exercise physiologists speak of a "having effect," they mean the increased capacity induced by consistent use, exercise, or stress of parts of the body. Although the limits of adaptability of an organ, organ system, or muscle system may be fixed by heredity and by a combination of previous and present unrecommended effects, most systems that are taxed in regular running will improve in capability.

Table 1. ANOVA of the Change Scores of the Fitness Measure.

Source of Variation	Sum of Squares	df	Mean Squares	F
A (Run)	352321.7500	1	352321.75	9.3028*
B (Group)	91256.5200	1	91256.52	2.4095
A x B	81726.1246	1	81726.12	2.1579
Within Cell	1628516.6830	43		

*p < .05

Sachs Sentence Completion Test. A two-way

analysis of variance was used to determine the effect of running therapy vis-a-vis group dynamics on changes in ratings of the Sachs Sentence Completion test before and after the experiment. Tables 2, 3, and 4 summarize the ANOVAs for the three self-concept subscales of the Sachs Sentence Completion test that had significant effects: Guilt feelings, Attitude towards own abilities, and Attitude towards the future.

Under the area of self concept, the three subscales of guilt feelings, Own Abilities, and Future showed significant improvement; whereas the subscales of Fears, Past, and Goals and Ambitions did not.

One cannot help asking why it is the former three subscales that showed significant improvement and not the latter three. It seems like it is the more "surface" subscales that improved rather than those that were more deepseated. Perhaps it was because the experiment lasted only six weeks. If the experiment had lasted much longer, the subscales of Fears, Past, and Goals and Ambitions might have exhibited significant improvement as well.

Table 2. Two-Way ANOVA on Guilt Feelings

Source of Variation	Sum of Squares	df	Mean Squares	F
A (Run).	1.8003	1	1.8003	5.54*
B (Group)	.1141	1	.1141	.3512
A x B	.0467	1	.0467	.1437
Within Cell	13.9728	43	.3249	

*p < .05

Table 3. Two-Way ANOVA on Attitude Towards Own Abilities

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
A (Running T)	4.2632	1	4.2632	8.7828*
B	.0221	1	.0221	.0455
AB	.3808	1	.3808	.7845
Within Cell	20.874	43	.4854	

*p <.05

Table 4. Two-Way ANOVA Towards The Future

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
A (Running T)	1.7840	1	1.7840	4.3406*
B (Group T)	.5287	1	.5287	1.2864
AB	1.2157	1	1.2157	2.9579
Within Cell	17.6721	43	.4110	

*p < .05

The subscale Fears tapped facets of the personality that were probably too threatening to improve after only six weeks. However, after running regularly three times a week for six weeks and actually seeing and feeling an improvement in terms of time and distance traveled, it is expected that one's attitude towards one's own abilities would improve. Having more faith in one's abilities would probably cause a ripple effect in other subscales. One's future looks brighter if one had more faith in one's abilities; but probably not enough for one to make actual changes in one's goals and ambitions. Too much would have had to be required and expected before one could actively change one's goals and ambitions. Having a positive attitude towards one's abilities may give one the courage to look back at the things one has done that one is not particularly fond of; the things one feels guilty about. It is presumed that, with an increase in self-concept, one can look at one's misdeeds and not overreact by being devastated nor debilitated by it. That is the first step. Perhaps in time one can look back at one's entire past and not be frightened by it, but at the moment, it is still too threatening to do so.

The tests show that running therapy had a significant effect on the self-concept measure. This finding is not very new. In fact, the literature shows one of the most common psychological constructs affected by running has been self-concept. The reasons presented for this enhancement have been achievement of goals, enhanced body image, and sense of mastery and control over one's body and, in general, over one's life. The importance of self-concept to overall psychological well-being is emphasized by Epstein (1976), who enlarges the definition of self-concept to include nearly all aspects of

behavior. Like most theories, one's self-theory is a hierarchy of major and minor postulates. Invalidating or changing minor postulates of one's self-theory require only minimal adjustments and poses no great threat to the theory's stability. But invalidating a major postulate may subject the entire theory to collapse, as in cases of schizophrenic disorganization. The most important function of the self-theory is to maintain a favorable pleasure/pain balance, but it also assimilates the data of significant experiences and helps one maintain self-esteem. A running program that positively influences all three functions of the self-system is more likely to improve a person's self-concept than other types of running programs. In general, running should result in more pleasure than pain (which is why it lasted only 20 minutes a session); provide new data about the self that influence minor rather than major postulates; and enhance the runner's self-esteem. The other question that can be asked, of course, is why Group Therapy, which is a psychological intervention, had less impact on a psychological construct like self-concept than the physical intervention of running.

Mental Status Exam. A two-way ANOVA was used to determine the effect of running therapy vis-a-vis group dynamics on the MSE. Table 5 shows the results of this test.

The two-way ANOVA on the MSE shows significance on all three possible sources of variation: Running therapy, group dynamics, and the interaction effect.

The MSE measures more than clinical scales, it measures normality scales. These scales rely on their being present rather than their being absent, to mean good news. They include attributes like reliability, Insight, Judgment, Memory, Consciousness, and Orientation.

It does not rely on self-reports. Self-reports are highly vulnerable to subject bias and demand characteristics (Hersein & Barlow, 1976). The MSE gets around these limitations by relying not only on what the subject has to say about himself, but also on what other people say about him.

Table 5. Two-Way Anova on the Change Scores of the MSE.

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F
A (Running T)	75.1218	1	75.1210	34.3712*
B (Group T)	35.5970	1	35.5970	16.2871*
AB	48.7847	1	48.7847	22.3210*
Within Cell	93.9812	43	2.1853	

*p < .05

Greater objectivity is achieved. The important factor of how the subject comes across to other people is taken into account. Not only is lying to look good avoided; but not reporting something because one is not aware of it is also avoided.

It seems that running had an impact on more superficial attributes than group dynamics did. Group dynamics needed more conditions satisfied before it could make an impact, but when it did, it was in areas that were more characterological. The reason the MSE was significant for both running and group dynamics is probably because the MSE is composed of both "state" attributes, which would be more affected by running; and more characterological "trait" attributes, which would be more affected by group dynamics. The cell means relevant to the interaction effect appear in Table 6.

The interaction effect comes about from the fact that the mean of group D is very different from the means of the other three groups. Whereas all the three other groups improved, Group D deteriorated. This shows that therapy is vital to prevent deterioration of the subjects. Both running therapy and group dynamics are effective therapeutic interventions. Subjects exposed to either therapy improved. But between the two, running therapy is the more effective intervention.

Final Status. After a soldier is discharged from the NP Service the Military Board decides whether (1) He is psychologically fit to go back to duty or whether (2) he is psychologically unfit and should therefore be separated from the military. Either fate is what is called his final status. Shortly after the experiment, the Board

Table 6. Cell Means on the MSE

	GROUP DYNAMICS	
	+	-
RUNNING +	1.80	2.10
THERAPY -	1.31	-2.49

made decisions on the fate of inmates from the NP Service, among whom were the 47 subjects in our experiment. The Board was unaware that any experiment had taken place and came up with the following decisions: 36 out of the 47 subjects were considered fit for duty. Among those considered unfit for duty, 1 came from Group A; 3 from Group B; 2 from Group C; 5 from Group D.

Table 7 shows the results of chi-squares done between each pair of groups to determine whether the group to which the subject belonged had any effect on his final status.

The significance between groups A and D proves that getting both therapies does make a difference as compared to getting no therapy at all even immediately after the experiment was run. The difference between the groups becomes even more glaring after a 7-month follow up. Several of the original subjects who were sent back to duty had relapses and were thus considered unfit for duty. Table 8 shows the results of the chi-squares done between each pair of

Table 7. Chi-Squares of the Final Status of Subjects.

Group	X	P
A vs. B	1.150	NS
A vs. C	0.586	NS
A vs. D	4.600	<.05
B vs. C	0.065	NS
B vs. D	1.320	NS
C vs. D	1.654	NS

groups after the 7-month follow up.

The chi-square proved significant for Groups A vs. B and A vs. D, while a trend towards significance appeared for groups A vs. C. These findings seem to suggest that, in the long run, one must combine the two therapies in order to have long-lasting effects.

DISCUSSION

Running has shown itself to be an effective way to improve both the physiological and psychological health of psychologically dis-

Table 8. Chi-Squares of the Final Status of the Subjects.

Groups	χ	p
A vs. B	4.958	<.05
A vs. C	3.030	NS
A vs. D	6.693	<.05
B vs. C	0.202	NS
B vs. D	0.031	NS
C vs. D	0.342	NS

turbed people, as measured by the fitness measure, the SSCT, and the MSE. Group Dynamics has shown itself to improve the psychological health of people as measured by the MSE.

I shall now focus on the possible reasons running proved an effective intervention for psychological problems. Several hypotheses have been postulated to explain the benefits of running; but most of these have been shortsighted, focusing on what it is about running that might possibly help improve mental health. What might be more beneficial is to focus on what it is about MAN that allows us to be so affected by running. What is it about our nature that enables our psyche to improve with a physiological intervention? There is a theory about man that contradicts the dualistic notion of man as a separation of body AND mind which can adequately explain the reasons running has such an impact on mental health.

This theory states that man is a unity of body-mind functions according to these four principles (Pert, 1986, 1987):

1. Mind-body functions modulated by information substances reside in receptors activated at the cellular level rather than being limited to receptors in the brain.

2. All information substances, and not only those that are found in the brain, coordinate mind-brain-body functions.

3. The convergence of information substances and their receptors at specific loci throughout the brain-body (rather than just at the brain) makes up a "nodal network of psychosomatic communication."

4. A "relational network" rather than a hierarchy of control focused on the brain (mind) is more descriptive of mind-body relationships. In other words, the higher control functions of the central nervous system do not exert dominance over the rest of the body. Rather, each nodal locus influences the holistic functioning of the entire system.

For the longest time the traditional dualistic view of the separation of mind and body has dominated both Western and Eastern thought so much that no "mainstream thinker," no "self-respecting scientist" questioned the possibility of an alternative. This theory of mind-body unity, however, is not really all that original. Jung (1975, 1976) and other depth psychologists have noted that ancient systems of psychology, medicine, and human developments such as kundalini yoga have always localized consciousness, intuition, and emotion at different levels of the entire mind-body system. Many non-Christian cultures considered it an aberration of the white man to believe that consciousness was limited to the brain. Even the body therapies made claims that were similar to this theory we are now proposing. What makes this theory exciting is neither its newness nor its originality. Other peoples, other cultures have made similar claims. Only recently (Pert, 1986; Gold, 1987; Izquierdo & Dias, 1984) has there been any empirical data to support the theory. It is only recently that data from the previously separated fields of psychology, neurology, anatomy, biochemistry, molecular biology, and physiology are being integrated into an almost-whole, leading to new principles of body-mind communication which have been formulated; and may be continuously reformulated as more data comes up. These data do not come merely from the social sciences either; but also from the natural sciences: biology, physiology, endocrinology, etc.

Equally important is the fact that neuropeptide receptors are not just in the brain; they are also in the body. It has been shown (Rossi & Check, 1988) biochemically that there are angiotensin receptors in the kidney identical to those in the brain, and in a way that is not yet clearly understood, the kidney-located receptors conserve water. The point is that the release of the neuropeptide angiotensin leads both to the behavior of drinking and to the internal conservation of water. Here is an example of how a neuropeptide can integrate what happens in the body with what happens in the brain.

It is possible that other receptors for other neuropeptides will be discovered in other parts of the body. If a neuropeptide in the kidneys has already been discovered which says: "Let's conserve water," how much longer will it take before we discover one that says: "Enough of this depression. I want to view life a different way for a change."; or possibly another one that enhances self-concept because it says: "I'm not so bad after all."; or one that helps minimize anxiety because it says: "Why am I so worried? Worrying won't do any good. I have to do something more constructive than that. To be sure running is not the final solution, but it is better than stewing and wallowing in self-pity. It is better than getting into a panic. Perhaps, after I run, I can think of more concrete ways to alleviate this anxiety." And, just as angiotensin was discovered in the kidneys, perhaps other neuropeptides will also be discovered—located in the feet, the heart, near the veins and arteries, and whatever other organs and glands are activated by running which will bring us to a state of consciousness and to alterations in those states.

While interdependent does not mean identical, are the conditions necessary to maximize the

effect of running therapy the same as the conditions necessary to maximize effects of traditional therapy? The author suspects not, as suggested by the data that running needs to be sustained to ensure its benefits. Buffone (1980) has noted several similarities between running therapy and medication:

1. Running, like medication, must be administered at a particular dosage (duration, frequency, intensity) to produce a therapeutic effect.

2. Running, like medication, must be done regularly to be effective. The runner "needs" regular doses of exercise to maintain the therapeutic effect (Sime, 1977). Similarly, compliance to the exercise regimen is vital in order to first produce and then maintain a successful outcome. The psychological improvement associated with running subsides after the patient discontinues the regimen.

3. Running, like medication, seems to be most effective when used in conjunction with supportive and other psychotherapies.

One can, of course, look at this the other way around: Other psychotherapies are more effective when used in conjunction with running therapy because it is only then that man is treated in his totality. Assuming that most clinical problems do not manifest themselves in a single part of the patient's system (e.g., cognitively, affectively, or behaviorally) multiple interventions directed at more than one area of the patient's functioning are likely to be more effective than a single intervention.

Granted that there are definite limitations to running as a form of therapy, it also has some definite practical advantages. For one, it is more cost effective in many ways. For a nation like the Philippines, that is certainly an added boon. It is cost effective because it requires less time than traditional psychotherapy to be effective. This experiment lasted merely six weeks and showed some rather startling improvement in both the physical and the psychological sphere. Some studies have claimed improved results in as short as three weeks time. Most other psychotherapies need much more time than six weeks to be effective. Second, it does not require patients to be articulate, or even verbal. That way therapy is not limited to only the articulate or the educated, but can be accessible to anyone who is interested. Third, there is no stigma attached to joining a running program. Unfortunately, there is still one attached to going for psychotherapy. Thus, those who may feel uncomfortable "going to a shrink" will not feel any discomfort "going for a run." Fourth, it does not require the healer to be a Ph.D. an M.A., or even an AB degree holder in psychology. All it needs is someone who understands the principles of running and will be able to pace those that run with him. However, if one wanted to maximize the effects of running, a psychological intervention together with this physical intervention would be more beneficial. Finally, it is more time and practitioner efficient. Even the most skillful group therapist would not be able to handle a group any larger than 15. A running therapist, however, would be able to handle groups as large as 30 at one time.

But the real benefits of incorporating running therapy with psychotherapy reach far deeper than that. The reason it does is that, by incorporating running therapy in a program of psychotherapy, one is really adhering more closely to the truth, to what man truly is: A being whose mind is important, but whose body is just as important; indeed, a true unity of body-mind. To quote Harper (1978):

> "The entire quality of my life appeared to have been enhanced via improved sensual, proprioceptive, and cognitive functioning and stimulation. I once again was able to appreciate my childhood experiences of what it meant to run in the wind, to smell the flowers and the plants in the open air, to run into the wind and absorb its force and coolness, to run into the face of a warm sun, to sweat and be cooled and rinsed, to breathe the freshness of morning . . . I realized then that it was a natural inclination of humankind to run and be out in the open air with the many miracles of life."

One area where there is still need for more

research is the effect of running on psychic states insofar as it sheds light on the therapeutic effects of running. If our subjects had run for 45 minutes instead of 20, they might have experienced a runner's high (Kostrubala, 1976). Runner's High has been likened to an altered state of consciousness; when realizations regarding one's life are supposed to be more easily integrated into one's psyche. Kostrubala (1976) even does therapy with his clients while running, claiming it is so much better than traditional talking therapy alone that he refuses to deal with patients who do not run with him. He says:

> "In this new therapeutic role I was doing something markedly different. I was directly participating in the action with the patient—we were both running. And we experienced similar phenomena. . . . If I compare this technique of therapy with dream analysis, it's like dreaming the same dream as the patient at the same time. The therapy was immediate. The nuances were immediately available and my own consciousness was more visible to me and to my patients. At times, it seemed the archetypes within us rose up to consciousness and lived and talked as we ran along." (p. 131).

Noting the introspective opportunities in running, Andrews (1978), in the *Psychic Powers of Running*, elaborated on the possibility that running unravels the mystery of the unconscious. It has been said that the repetitive, rhythmic motions of running make it a great opportunity for hypnotherapy to occur. Studying how running as therapy can be improved with the added dimension of possible altered states of consciousness as a variable would prove worthwhile.

Yet another area worth studying is the exact nature of the interdependence between body and mind. What exactly is the relationship between the two? Findings from this study definitely confirm that there is a strong relationship; that what affects one affects the other, but how exactly this works is still unclear. Is the relationship one on one? Is it synergistic as the interaction effects between the two variables, running therapy and group therapy, seem to suggest? I have observed that some people feel better emotionally when they run. Yet they also have to feel at a certain level before they can run; i.e., they cannot run when they are really down emotionally. It seems that a minimum level of wellbeing is necessary before one can take advantage of the emotional and psychic benefits of running.

If running therapy has been proven to be effective, perhaps the other somatic therapies are, too. It is up to the scientific community to recast their claims into workable hypotheses with viable operational definitions. If the main reason running is an effective treatment for psychopathology is because of the interdependence between body and mind, then it is perfectly logical to assume that the other body therapies may be equally effective as long as the appropriate "dosage" is discovered.

Finally, is running merely therapeutic or is it also preventive? Are the adages "A sound mind in a sound body" and "All work and no play makes Jack a dull boy" merely old wives tales or truisms the wise among us ought to live by? Studies to help settle this question would have practical as well as psychological ramifications.

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