## CHEPTER VI
### SUMMARY AND CONCLUSION

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CHAPTER VI
SUMMARY AND CONCLUSION

6.1 Introduction

We humans live today lead sedentary lives of the information age (Fox, 2003)\(^1\) (CDC, 2010)\(^2\). It is a lifestyle that is becoming increasingly complex – a management challenge for each of us, individually (Bawden, 2008)\(^3\), for young people and the field of education in particular (Bendit & Hahn-Bleibtreu, 2008)\(^4\), and for organizations (Drucker, 1994)\(^5\) (Fairtlough2005)\(^6\) (Swanson et al., 2001)\(^7\).

Modern science (Roza, 2006)\(^8\) is now becoming aware that our internal lives are also very complex. This inner complexity involves our bodies and our minds, and there is an intimate interrelationship between the two (Diamond, 2007)\(^9\) (Wilfrid, 2008)\(^10\).

The change from our hunter-gatherer past to our present lifestyle (Redfield, 1953)\(^11\), has caused a dramatic change from a physical lifestyle to a mental one (Greaves, 2010)\(^12\). This change has had some dramatic negative effects on our physical and mental health (WHO, 2005)\(^13\) (Last, 1986)\(^14\).

This new situation provokes the need for a new response to these problems: a radical approach to managing the mind and body and its relationship to an ever more complex world (Rose, 2006)\(^15\).

The basis of this new approach can now be grounded in modern scientific research (Ratey, 2001)\(^16\) (Pert, 1997)\(^17\), which is creating a new agreement within the scientific community that what effects the mind effects the body and vice versa; and that the brain is continuously adapting to the environment (Michel, 2012)\(^18\) (Diamond, 2000)\(^19\) (Rigoli et al., 2012)\(^20\). Leading to the conclusion that physical education can also educate the mind (Blakemore & Frith, 2005)\(^21\).

This mind-body management education (MBME) program is a multi-dimensional approach. Firstly it addresses the physical challenges humans now face. Secondly, by applying the findings of modern research, it is also able to address the mental challenges of today through the body. And lastly, by including the understandings of self-development theory, the program has been designed particularly to help people respond to an increasingly rapidly changing world (Hesselbein et al., 2000)\(^22\).

The result of living in this information age is that spend much of our time sitting in front of computer screens and terminals, processing that information, where the physical demands of the task include little more than typing on a keyboard or stretching out to reach the computer mouse! (Fox, 2003)\(^1\) (CDC, 2010)\(^2\).

As our lives have become ever more complex, the difficulty of dealing with that complexity has created a universal need for “management” (Drucker, 1994)\(^5\) (Fairtlough, 2005)\(^6\). In fact in the world around us the role of management has become a huge growth industry of its own (Swanson et al., 2001)\(^7\).

What is little appreciated is that our internal world is at least as complex as the outer world. Each human being has about 15,000 times more cells in their bodies than there are people in the world! (Roza, 2006)\(^8\).

2. The Complexity of the Interrelationship between Mind and Body

Managing our internal milieu, the relationships between these 100 trillion cells in each human body may be one of the most sophisticated phenomena in the known universe (Rose, 2006)\(^15\).

Most of this management is organized by the biochemistry of the body and is beyond direct human regulation (Wilfrid, 2008)\(^10\). However, no part of the human body is beyond the influence of the rest of the body except in pathological situations. In the normal functioning, the mind-body is one interrelated, interdependent whole, with each part in a continuous dialogue with the rest of the organism (Diamond, 2007)\(^9\).

This whole mechanism is also in a continuous relationship with the external world. So, what is happening around that body, will affect its functioning. (Wilfrid, 2008)\(^10\). Equally important: what is happening in the mind will affect the body, and vice versa. For, example, the impact of what is happening in the mind, like being tense and unhappy, will have one effect on the body. Being relaxed and at ease, will have quite a different effect. Similarly, the impact of what is happening to the body, like an external stimuli applied directly to the skin, like a burn which causes pain, will have one effect on the mind, while the smell of a rose will have quite another. This understanding is the basis of the wide acceptance of psychosomatic phenomenon: that whatever affects the mind will also have an effect the body and vice versa (Diamond, 2007)\(^9\).
Unlike the situation in the East, where it has been understood from at least the time of Patanjali’s Yoga Sutras, that the mind and body are interdependent phenomenon, this same understanding in the West has been delayed by the assumption that the mind and body were separate entities. Now, and only very recently, has Western science conclusively confirmed that the East’s view, that the mind and body are one, is correct (Diamond, 2007). Once this is understood, the implications are hard to underestimate.

Firstly it implies that whatever is happening around us will effect our minds and bodies. Secondly, it implies that whatever we are doing with our bodies will affect our minds. And that what is happening inside our minds is going to affect our bodies.

3. Historical Changes to the Present in the Human Lifestyle

In terms of the first implication, it is important to appreciate just how much our external world has changed – recently and dramatically.

For some millions of years our predecessors lived almost entirely in the physical domain. Food was either hunted or gathered, or later sown and harvested. Water was “drawn” from a nearby source and carried to where it was needed, or the people had to take themselves to the water. Shelters had to be built by hand, and later, when fire was discovered, wood could be gathered, fires tended, and some light and safety brought to an otherwise hostile world of carnivorous animals whose fearsome potential and power was only amplified by darkness (Redfield, 1953).

Essentially, compared with those millions of years of living very physically, we have very recently and very suddenly become sedentary, using our bodies much less and our minds much more.

4. Implications for Our Bodies and Minds

The implication for our physical health of this change in the way we live now is enormous and has triggered a whole medical field of study. These conditions are often referred to as “diseases of civilization” (Carrera-Bastos et al., 2011) (World Health Organization Report, 2005). The second major implication is that these changes in our physical environment have inevitably had dramatic effects on our mental health (World Health Organization, 2005) (Wallace, Kohatsu, & Last, 2007).
Given the interrelationship between the body and the mind, all these physical changes will also affect the mind, and all these mental changes will also affect the body (Diamond, 2007).

5. The Basis of a Response to the Problem

These intricate interrelationships between our external world, our bodies and our minds raise of course the need for a whole new area of management for both. As Rose (2006) puts it, “With its hundred billion nerve cells, with their hundred trillion interconnections, the human brain is the most complex phenomenon in the known universe – always of course excepting the interaction of some the six billion of such brains and their owners in the socio-technological culture of our planetary system.”

Hence the need for a whole new discipline: Mind-body management.

Just as the world of management in the external world is becoming increasingly complex in view of rapidly changing technology, new “relations” problems with, for example, government customers, employees, social groups (Drucker, 1994) (Fairtlough, 2005), so the same is true of our internal world as Rose makes clear above.

6. The Scientific Basis for a Solution to the Problem through Education

In educational terms, the focus traditionally has been on educating the mind. Physical education has often been seen as of secondary importance. Still today only two states in the US require adequate physical education instruction in middle school, but no states do so for high school students (McCullick, 2012).

While there has been a long-standing acceptance among a minority of educationalists that education should be directed towards “the whole child”, the focus of physical education has largely been directed towards a healthy child, on the basis that good health supports learning.

Now modern science is taking this a significant step further. Ratey (2001), a clinical associate professor of psychiatry at Harvard Medical School, makes the point that it is now becoming clear from the neuroscience of how the human brain develops that physical movement is directly related to our potential to learn and process new information. He writes, “There's sort of no question about it now, the exercise itself doesn't make you smarter, but it puts the brain of the learners in the optimal position for them to learn.” He further explains, "It has become obvious that we can actually change our brains. By altering the external environment of our surroundings or the internal
environment of our bodies, we can take better advantage of our strengths and amend our weaknesses.” He concludes, "If you affect one area, many others are also affected. Clearly, modern science is confirming that there is a continuous biofeedback loop in which our thoughts are influenced by our bodies and vice versa.”

Candace Pert, author of Molecules of Emotion (1997)\textsuperscript{17} and research professor in the department of biophysics and physiology at Georgetown University School of Medicine, Washington, D.C. makes the same point: “Our bodies don't exist to carry our heads around, any thinking has the whole body participating.”

Very recent research continues to support the fact that this is a very new, and promising, area of research. As Michel (2012)\textsuperscript{18} writes in her article on the mind body relationship, ”Empirical research on this issue is still rare.” However, she cites the results of research (Diamond, 2000)\textsuperscript{19} that “contribute important information about specific associations between components of motor coordination (manual dexterity, ball skills, and balance) and executive functions (working memory, inhibition, and switching).”

In another paper (Michel, et al., 2011)\textsuperscript{26}, she points out that, “Children with motor coordination impairments showed lower pre-academic skills, facing a substantial disadvantage at the beginning of formal schooling.”

This growing area of research supports an overlap in adolescents, “between motor coordination and executive functions, which has important practical implications” (Rigoli, et al., 2012)\textsuperscript{20}.

Blakemore and Frith (2005)\textsuperscript{21} report specific research which demonstrates the value of physical exercise on mental function, “Exercise has a positive effect on mood-altering brain chemicals” and “is frequently used as a treatment for depression and other mental health problems.”

The major practical implication is that the need mentioned above –of developing a new discipline of mind-body management – could be based on the latest scientific findings. The current presentation of a program of mind-body management for education can be a practical contribution to this new discipline

The major paradigm shift here is that movement-based programs can be developed as interventions that not only affects the body directly but also indirectly affects the mind.
Because the body is so much more easily accessible to any intervention than the mind, the possibility of using the body as a doorway to affect changes in the mind has enormous potential.

Given that the effects of the recent dramatic changes in our lifestyle – on our minds and bodies – have been precipitated by changes in our external environment, it seems appropriate that our efforts to mitigate the ill-effects of these changes should also begin with the external, with the body.

7. What Others Are Doing?

Western science has been trapped in the idea that mind and body were separate since the beginning of the modern scientific era a few hundred years ago. And only very recently was it able to prove beyond doubt that this was not the case: the mind body were not separate at all, but in reality two aspect of one entity. Only when that was established could science seriously embrace the scientific implications of the mind-body as one phenomenon (Harrington, 2008)27. Only in October 2011 did the ten-year, trans-NIH program established by the US Congress in 1999 publish its report, Mind-Body Interactions and Health (MBIH) Program (Scott, et al., 2011)28.

The program had two basic goals: the expansion of scientific knowledge about the nature and underlying mechanisms of these mind-body interactions, and the translation of this knowledge into new kinds of health care interventions. Needless to say, only one year later this process is still in its infancy. So, the proposal here for a new Mind Body Management Program is fairly unique. Moreover, A search on Google (Google, 2012)29 for those that do exist reveals that they are usually for pain, or coping with stress, or promote spiritual ambitions. What is particularly rare is a program like this one directed towards allowing ordinary people to be relaxed, beautifully at ease, and still be ordinary!

8. A New Approach That Can Provide a Specific Solution to this Problem

So, while there is a long history of mind-body interventions based primarily on the body, what distinguishes this particularly mind-body management program is that it is based on modern scientific evidence of the potential for affecting the mind through bodily interventions. This particular intervention has been intentionally designed for the bodily and mental needs of contemporary society, selecting qualities that can influence the mind in ways that specifically relate to the challenges of today’s world.
In short, the simple lack of exercise and movement can be addressed by providing a movement program. In addition, if that movement program is correctly designed, then this same program can also affect the mind in a healthy direction, addressing precisely the needs of modern people.

Thus, mind-body management can be made into a reality, in a simple way that is easy for people to participate in, and on a regular basis. The result of good mind-body management will be a healthy body and a healthy mind.

Drawing from the experience of conventional management theory, the greatest challenges modern people face is responding to rapid change (Hesselbein et al., 2000). Hence the obvious physical qualities that relate to this challenge are flexibility and balance.

The next critical part of the program is that it should be educational. The program should give people the sense that they are learning to manage their own mind-body and not simply responding to external commands. For this reason awareness has been selected as a quality of the program. This allows the participant to notice the changes in their mind and body – as well as the changes these changes create in their daily lives. Thus creating a virtuous circle of change, learning, and understanding the benefits of those changes, thus provoking more change and further benefits.

Finally, the program needs to be a “self-management” program, so that increasingly the individual is empowered to appreciate that their minds and bodies are ultimately their responsibility. Breathing has been chosen as a quality to support this: as they become more familiar with being aware of their own breathing, in addition to becoming increasingly aware of the benefits of increasing flexibility and balance, they can understand that their own state of mind is closely related to how they breathe. In this way, the individuals become closely involved with their own mind-body management, thus adding the important element of “self-development.”

As a further support for this, grace and beauty has been added: they provide an additional element of self-awareness. Whether it is a reflection in a mirror, or a comment from a friend that “something has changed,” it is a powerful encouragement to make their own mind-body management a reality, a program that teaches them about themselves, and gives them the empowerment and responsibility for affecting change in their daily lives.
6.2 Review of Study – Interdisciplinary Approach

The fundamentals involved in creating the MBME program involve an interdisciplinary approach, which combines physical education, psychology, management theory and the science of education learning.

The “interdisciplinary” element is not just including these four different elements, but synthesizing them into one new multidimensional intervention. The critical aspect of this is to benefit from the current scientific research which raises the intriguing possibility of being able to influence the mind through a physical intervention, rather than approaching the mind directly, and in particular address the split between the body and the mind that has been the outcome of the sedentary, mentalized modern civilization as we have outlined above. The specific outcomes that would be most valuable would be the ability to learn to respond to a rapidly changing and unpredictable future in a flexible, balanced way at the same time both relaxed and aware.

- **The physical education** aspects included ensuring the program provided sufficient physical exercise for people with a sedentary people lifestyle, utilizing a variety of physical movements that would engage the whole body.

  The second key point was to introduce to the participants the understanding that “flexibility” and “balance” can include much more than loose joints and standing on one leg. It also involves the ability move all the different parts of the body, in small movements and large, quickly and slowly, in a variety of different combinations. In this way the participants can experience a deeper sense of balance – learning to balance a wide variety of elements in a relaxed flexible way.

- **From a psychological** point of view the key step was to use bodily movements to create psychologically measurable changes. Of particular interest is whether it is possible that different bodily movements might produce different psychological changes.

- **Management theory** was central to the understandings behind the study. The key requirement of the modern world is the ability to not only manage change, but even to love change, and be able to change ourselves. Management theory creates an image of an ideal team member in a 21st Century enterprise: a relaxed, flexible, balanced individual, who changes easily, and stays calm in the midst of every crisis (Senge, 2006). The next step was to take that image and apply those qualities to the body, which is much easier to do than to apply them to the mind! If awareness and breath were part of the session, would that allow the mind to consciously notice those same qualities? Could
that experience support the flexibility, balance, and relaxation of the mind? Would that be the route to educating people to develop the qualities described above of the ideal team member?

- **The science of education** was the fourth element that was synthesized into the MBME program. It was important not to just “teach” a new movement program as part of a mind-body intervention. More important was to create the environment in which people could learn how to respond to their own bodies, how to discover the best movements for that body on that day. The idea was to encourage the participants to see the body movement program as a journey of learning about themselves, and in particular, learning the process of development is in the hands: to give them the sense self-esteem that naturally follows such a process of self-development.

**6.3 Statement of Problem**

It is an experimental study to understand the effect of Mind-Body Management Education on Self-Development.

Firstly, today’s world is already complicated and stressful (Cummings & VandenBos, 1981)\(^3\), made more so by ever faster rates of change. It is estimated that 60-90 percent of visits to health care professionals are for stress-related disorders. (Cummings et al., 1981)\(^3\) (Elite, 1986)\(^3\). The physical problems associated with this are aggravated by an increasingly sedentary society that doesn’t have enough exercise.

In addition, we also need to know how to promote individual change in ourselves. Change so that we are able to cope with the changes in the world around us; and change so that we can also become innovative contributors to these changes!

This issue of change is a major challenge to everyone. In business the demands for people to change continue at all levels. In education also there is a major debate on the same issue. For example in China, educators are struggling with the challenge of giving students the kind of education that will create the flexible, innovative minds that their economy now needs, minds that can adjust easily to new situations – as opposed to the rigid, rote-learning style of today (Hulbert, 2007)\(^3\).

There is clearly a potential need for a simple, effective body movement program that can remove stress, can satisfy the requirements for energy expenditure, and can help the mind to be more flexible and open to change, as part of an ongoing process of self-development.
6.4 Objectives of Study

The specific objectives of this research can be described as under:

1. To analyze literature for interpretation of body-based programs and their effects on the body and the mind.

2. To identify appropriate components for development of mind body management education program and to measure body changes in respect of the same.

3. To develop Mind-Body Management Education program which improve the selected qualities of movement on the body and the mind.

4. To determine the effects of the MBME program on the body and the mind.

6.5 De-limitations of the Study

This study would obviously benefit from a large sample of participants practicing in the MBME program for a prolonged period. However, within the limited resources and time available, both of the researcher and the participants, it is necessary to delimit the study as follows:

1. The sample will be restricted to university students in Pune.

2. Only participants who attend for all 5 days will be admitted to the study.

3. The follow-up period is limited to 3 months.

4. This study was delimited for selected physical and psychological variables.

6.6 Limitations of the Study

1. Participation will be by necessity, voluntary, which is uncontrollable.

2. Only participants who attend for all 5 days will be admitted to the study. It is not possible to be sure of what other physical activities the students are also participating in.

3. Finding of the study particularly on mind variables are based on responses of subjects.

6.7 Assumptions Underlying the Study

1. It is easier to approach the body as a doorway to the mind rather than trying to approach the mind directly.

2. The five body movement qualities chosen will create the same qualities in the mind.

6.8 Significance of the Study

There are many approaches to physical and mental wellbeing that are mainly based on body movement. They require prolonged training in the right environment. The
demands of these disciplines may not suit everybody. By contrast, MBME is a simple, enjoyable, effective movement program that can fit into modern people’s busy lives, and yet also reduce stress, increase well being, and give their bodies a good daily exercise.

In addition, today’s challenging work, the educational (Hulbert, 2007) and business environment (Jones & Engligh, 2004) value individuals who are able to respond to ever changing situations, who can be flexible in their approach to problems, who can move easily from one position to another in discussions, for example, and who can related harmoniously with others; who can be creative and innovative in looking for ways to adjust to new situations, and who can be relaxed and aware in spite of the temptations to become tense and narrow in stressful situations, and are able to remain balanced despite being pulled in many different directions in their work.

Given the importance of these issues to modern societies, their economies, and education in particular, it is difficult to overestimate the value of giving people the opportunity of relearning these qualities in their daily lives through a simple body movement program like MBME.

Considering the context in which the 21st Century human being is living, and the way human is progressing, the capability of the mind-body to develop in response becomes crucial.

Managing the body mind becomes the major challenge for everyone.

Through this piece of research, the investigator is examining the possibility of creating a new approach to managing the body and mind through the MBME program.

6.9 Hypotheses

This research project is to explore the hypothesis that the MBME can provide a key to natural healthy movements – which will also support a healthy mind. And to measure how these changes could be effective in providing precisely the kind of “self-development” that is becoming such a necessity in today’s environment.

On the basis of the assumptions made and the literature reviewed, the investigator has formulated the following hypotheses:

6.9.1 Research Hypothesis

1. The MBME program on Flexibility: there is a significant effect in an experimental group and no significant effect in a control group.

2. The MBME program on Balance: there is a significant effect in an experimental
group and no significant effect in a control group.

3. The MBME program on Breathing: there is a significant effect in an experimental group and no significant effect in a control group.

4. The MBME program on Awareness: there is a significant effect in an experimental group and no significant effect in a control group.

5. The MBME program on Beauty/Grace: there is a significant effect in an experimental group and no significant effect in a control group.

6. The MBME program on Self-Development: there is a significant effect in an experimental group and no significant effect in a control group.

6.9.2 Null Hypothesis

1. There are no differences in the mean values of the pre- and post- Flexibility Tests in the Experimental Group; and there are differences in the mean values of both tests in the Control Group.

2. There are no differences in the mean values of the pre- and post- Balance Tests in the Experimental Group; and there are differences in the mean values of both tests in the Control Group.

3. There are no differences in the mean values of the pre- and post- Breathing Tests in the Experimental Group; and there are differences in the mean values of both tests in the Control Group.

4. There are no differences in the mean values of the pre- and post- Awareness Tests in the Experimental Group; and there are differences in the mean values of both tests in the Control Group.

5. There are no differences in the mean values of the pre- and post- Beauty/Grace (Body Image Assessments: ASI-R) Tests in the Experimental Group; and there are differences in the mean values of both tests in the Control Group.

6. There are no differences in the mean values of the pre- and post- Self-Development (Multidimensional Self-Esteem Inventory: MSEI) Tests in the Experimental Group; and there are differences in the mean values of both tests in the Control Group.

6.10 Plan and Procedure of Phase 1: Literature Analysis

In the present study, published studies in academic journals, published books, recognized sources of statistics etc., were used to determine the criteria for mind-body intervention. The study conducted in following three stages:
1. Systematic Review of related literature

The ancient as well as modern literature was reviewed systematically to identify the major dimensions of the mind-body issue, managing self-development, and educational remedies.

2. Preparation of Checklist

Based on the attributes of the major dimensions, common checklist was prepared for mind-body issue, managing self-development, and educational remedies. For this, standard procedure was followed (Guilford & Fruchter, 1973). The preliminary form of the checklist to assess the status of mind-body issue, science of education, and Managing self-development had 12 items respectively.

3. Source of data

Each of the selected references, accessed from all the available sources, were verified by using the Checklist as developed in this study and data related to the contribution of each of the literatures towards mind-body issue, managing self-development, and educational remedies were collected.

Plan and Procedure of the Literature Analysis

In the present study, the fundamental issue is to understand the mind and body and their inter-relationship. This involves so many factors for the researcher to investigate to identify which of those many factors were relevant to support the development of a new mind body intervention and to study its effectiveness. The plan and procedure of the study includes the following steps:

- **Step 1**: A literature analysis was undertaken to analyze and interpret, from an historical perspective, fundamental relationship between the mind and the body.
- **Step 2**: From this analysis emerge an understanding of the mind body problem, and its implication for physical health, mental health and society in general.
- **Step 3**: The implication and possible remedies of these issues for education and self-development were reviewed.
- **Step 4**: Based on the understanding of the problems outlined in 1, 2 and 3 above a further literature review was undertaken to explore past and present mind body intervention in order to establish a appropriate components for a new mind body management program with particular reference to education.
6.11 Plan and Procedure of Phase II: New Product Development

For new product development, often referred to as the NPD (New Product Development) process (Belliveau, Griffin, & Somermeyer, 2002)\textsuperscript{36}, it is important to follow a clear plan and procedure step-by-step. In the present study this process is divided into four stages as follows:

**Stage 1: Proposed Product:**
- Idea generation: Purpose of NPD
- Idea screening: Objects of NPD
- Concept development: Aim of NPD

**Stage 2: Actual Product:**
- Title of New Product: MBME program
- Developing Activities Based on Theory
- Principles of MBME program
- Structures of MBME program

**Stage 3: Modified product:**
- Need for modification of the product
- Plan and procedure
- Findings of pilot study
- Resulting modifications

**Stage 4: Final product**
- Realization and Confirmation of objectives of MBME program
- Creation of final product of MBME program

6.12 Plan and Procedure of Phase III: Experiment

1. Through literature analysis to assess the appropriate components and identify body based programs and their effect on the body and the mind.
2. Developing product: MBME (Mind-Body Management Education) program.
3. Select schools for experimental study (using stratified random sampling).
4. Prepare tools for data collection:
5. Prepare two different time schedule for experimental and control group.
6. Prepare tools for physical measurements and questionnaire for psychological measurements.

7. Prepare checklist for results.

8. Take an appointment for classroom for conducting MBME program and measuring data.

9. Collect data and Analyze statistically.

10. Generalizations and/or predictions based on findings.

11. Conclusion and suggestions

**6.12.1 Statistical Tools Used in the Study**

Data obtained through the questionnaires was input in Microsoft Excel. It was then exported and analyzed statistically using the Statistical Package for Social Science (SPSS version 16.0). The following statistics was used to analyze the data:

- Descriptive statistics (for analyzing findings using frequencies, means, standard deviations, skewness and Kurtosis)

- Correlation analysis (for testing association between variables of study)

According to Libarkin & Kurdziel (2002)\(^{37}\), descriptive statistics can be used to describe and reveal participant characteristics, answers to research questions and summaries research findings in statistically meaningful ways.

Therefore, in order to present the essential characteristics of the data in the study, data obtained from physical measurements and questionnaires were arranged into an interpretable form using SPSS to calculate numerical indexes (Johnson & Christensen, 2004)\(^{38}\) such as frequency distributions, averages, percentages of item responses, mean scores (M) and standard deviation (SD) for categorical variables.

To investigate the association between variables that affect the mind/body, correlation analysis was performed on the data (using paired samples t-test in SPSS).

**6.13 Phase- Objective-wise Results and Discussion**

The present research study has adopted a multimethod research design in three phases to find solutions to the objectives of the study. In Phase I, for objective 1 and 2, using the literature analysis method to determine the criteria for a mind body intervention. In Phase II, for objective 3, using the product development method to create a new mind body intervention. In Phase III, for objective 4, using the experimental method to
determine how the subjects in the study are affected by the intervention and to find out whether there are changes in the selected qualities assessed by the measurement of appropriate variables.

6.13.1 Phase 1: Literature Analysis

Objective 1. To analyze literature for interpretation of body-based programs and their effects on the body and the mind.

Objective 2. To identify appropriate components for development of mind body management education program and to measure body changes in respect of the same.

The preliminary form of the checklist to assess the status of mind-body issue, science of education, and Managing self-development had 12 items respectively. Findings from 5 items; Meaning/ definition, Dimension / Factors, Role of mind-body Intervention improving, Importance of mind-body intervention, and Literature suggested mind-body intervention are in following table 6.1.

Table 6.1
Findings on Checklist

<table>
<thead>
<tr>
<th>1. Meaning/ definition of-</th>
<th>A Historical Perspective of the Mind and Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mind-body issue of –</td>
<td>-The Theory of Mind and Body – Past and Present</td>
</tr>
<tr>
<td>Science of Education of –</td>
<td>-Human Evolution: From the Physical to the Mental</td>
</tr>
<tr>
<td>Managing self-development of –</td>
<td>The Implication for Physical Health</td>
</tr>
<tr>
<td></td>
<td>The Implication for Mental Health</td>
</tr>
<tr>
<td></td>
<td>The Implication for the Way We Live Now</td>
</tr>
<tr>
<td></td>
<td>The Implication for Society in General</td>
</tr>
<tr>
<td></td>
<td>The Implication for Education and Self-Development</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Dimension / Factors of-</th>
<th>Self Development in Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mind-body issue of –</td>
<td>Mind Body Management Education (MBME) for Self Development</td>
</tr>
<tr>
<td>Science of Education of –</td>
<td></td>
</tr>
<tr>
<td>Managing self-development of –</td>
<td></td>
</tr>
</tbody>
</table>
3. Role of mind-body Intervention improving of-
Mind-body issue of –
Science of Education of –
Managing self-development of –

Benefits of Mind-Body Interventions
Benefits of Body to Mind Interventions
Benefits of Mind to Body Interventions

4. Importance of mind-body intervention of–
Mind-body issue of –
Science of Education of –
Managing self-development of –

Mind Body Integration
The Historical Review of the Philosophy and Application of Mind-Body Programs

5. Literature suggested mind-body intervention for -
Mind-body issue of –
Science of Education of –
Managing self-development of –

Interdisciplinary Approach
1. Movement Education – Psychomotor Considerations
2. Psychological Considerations
3. Management Theory
4. Science of Education & Learning

6.13.2 Phase II: New Product Development

Objective 3. To develop Mind-Body Management Education program which improve the selected qualities of movement on the body and the mind.

After the initial stage of modifications through pilot study it provided the opportunity to support the realization of the final product.

The following table 6.2 contains the final principles of Mind-Body Management Education program. And the following table 6.3 contains the final structures of MBME program and details of activities.

Table 6.2

<table>
<thead>
<tr>
<th>Principles</th>
<th>Definition</th>
<th>Final MBME Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>How often you exercise</td>
<td>Initially, daily- then weekly.</td>
</tr>
<tr>
<td>Intensity</td>
<td>How hard you work during exercise</td>
<td>Increase your application daily to stimulate your body within your limits of comfort and enjoyment.</td>
</tr>
<tr>
<td>Time</td>
<td>How long you exercise</td>
<td>30 minutes</td>
</tr>
<tr>
<td>------</td>
<td>----------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>-10mins: Flexibility &amp; Balance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-10mins: Breathing &amp; Awareness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-10mins: Beauty/Grace</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>The type of activity you're doing</th>
<th>5 finalized movement activities:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Flexibility, Balance, Breathing,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Awareness, &amp; Beauty/Grace</td>
</tr>
</tbody>
</table>

Table 6.3
Structure of Mind-Body Management Education program

<table>
<thead>
<tr>
<th>Stage</th>
<th>Components</th>
<th>Activity no. Name</th>
<th>Background Theory</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Flexibility</td>
<td>1. March &amp; Jump on the spot.</td>
<td>Dance, Movement Therapy</td>
<td>10 mins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Upper Body Twist</td>
<td>Kundalini Yoga, Artistic Yoga, Dance Therapy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Surya Namaskar</td>
<td>Yoga</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Balance</td>
<td>1. Body Balancing</td>
<td>Dance Therapy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. One leg stand</td>
<td>Yoga, Pilates</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Balancing with Mudra</td>
<td>Zen Dance</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Breathing</td>
<td>1. Watching the breath</td>
<td>Vippsana, Yoga</td>
<td>10 mins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Breathing with pelvis and trunk</td>
<td>Yoga, Zen Dance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Movement with Breathing</td>
<td>Dance Therapy, Yoga Dance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Awareness</td>
<td>1. Body Posture</td>
<td>Dance therapy, Physiotherapy, Yoga</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Movements in different directions</td>
<td>NIA, Zen Dance, Dance Therapy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Movement in a</td>
<td>Gabrielle Roth, Zen</td>
<td></td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>3rd</th>
<th>Beauty/Grace</th>
<th>different part of body</th>
<th>Dance, Figure Dance, Yoga Dance</th>
</tr>
</thead>
</table>

| 1. Free flow Lie down | Yoga Dance | 10 mins |
| 2. Free flow Sitting | Zen Dance |
| 3. Free flow Standing | NIA, Gabrielle Roth, Zen Dance, Yoga Dance, Tai Chi flow |

### 6.13.3 Phase III: Experiment

Objective 4. To determine the effects of the MBME program on the body and the mind.

The mind/body intervention, MBME, contains **five components**:

- **Flexibility**
- **Balance**
- **Breathing**
- **Awareness**
- **Beauty/Grace**

All the 5 components have their own treatment, different exercise routine and measurement tools.

MBME program is designed for **self-development**: using a physical intervention to affect the psychological variables measured by MSEI (Multi-dimensional self esteem inventory). The results have shown that the program significantly affected all the 11 variables. This confirms that MBME is effective as a mind/body intervention.

#### Table 6.4

<table>
<thead>
<tr>
<th>Components</th>
<th>Variables</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Flexibility</td>
<td>Flexibility</td>
<td>Significant</td>
</tr>
<tr>
<td>2 Balance</td>
<td>Balance</td>
<td>Significant</td>
</tr>
<tr>
<td>3 Breathing</td>
<td>Breathing</td>
<td>Significant</td>
</tr>
<tr>
<td>4 Awareness</td>
<td>Awareness</td>
<td>Significant</td>
</tr>
<tr>
<td>5 Beauty/Grace</td>
<td>1. Self-Evaluative Salience</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>
2. Motivational Salience Significant at the 5% level.

<table>
<thead>
<tr>
<th>6</th>
<th>Self-Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Global self-esteem</td>
<td>Significant</td>
</tr>
<tr>
<td>2. Competence</td>
<td>Significant</td>
</tr>
<tr>
<td>3. Lovability</td>
<td>Significant</td>
</tr>
<tr>
<td>4. Likeability</td>
<td>Significant</td>
</tr>
<tr>
<td>5. Self-Control</td>
<td>Significant</td>
</tr>
<tr>
<td>6. Personal Power</td>
<td>Significant</td>
</tr>
<tr>
<td>7. Moral Self-Approval</td>
<td>Significant</td>
</tr>
<tr>
<td>8. Body Appearance</td>
<td>Significant at the 5% level.</td>
</tr>
<tr>
<td>9. Body Functioning</td>
<td>Significant</td>
</tr>
<tr>
<td>10. Identity Integration</td>
<td>Significant</td>
</tr>
<tr>
<td>11. Defensive Self-Enhancement</td>
<td>Significant</td>
</tr>
</tbody>
</table>

In the Table 6.4 Major findings from the experiment related to research hypothesis have shown all five qualities (Flexibility, Balance, Breathing, Awareness and Beauty/Grace) and the Self Development are significantly affected – except one of two variables for Beauty/Grace.

6.13.3.1 Acceptance/ Rejection of Research Hypothesis from the Major Findings

1. MBME program is effective to increase Flexibility significantly.
   • There is an effect of MBME program on Flexibility significantly in an experimental group.
   • There is no effect of MBME program on Flexibility in a Control group.
   Therefore: the Research Hypothesis is accepted on Flexibility.

2. MBME program is effective to increase Balance significantly.
   • There is an effect of MBME program on Balance significantly in an experimental group.
   • There is no effect of MBME program on Balance in a Control group.
   Therefore: the Research Hypothesis is accepted on Balance.
3. MBME program is effective to decrease Breathing significantly.
   • There is an effect of MBME program on Breathing significantly in an experimental group.
   • There is no effect of MBME program on Breathing in a Control group.
   Therefore: the Research Hypothesis is accepted on Breathing.

4. MBME program is effective to decrease Awareness significantly.
   • There is an effect of MBME program on Awareness significantly in an experimental group.
   • There is no effect of MBME program on Awareness in a Control group.
   Therefore: the Research Hypothesis is accepted on Awareness.

5. MBME program is not effective to increase Self-Evaluative Salience on Beauty/Grace.
   • There is no effect of MBME program on Self-Evaluative Salience in an experimental group.
   • There is an effect of MBME program on Self-Evaluative Salience in a Control group.
   Therefore: the Research Hypothesis is rejected on Self-Evaluative Salience.

6. MBME program is effective to increase Motivational Salience at the 5 % of significance level on Beauty/Grace.
   • There is an effect of MBME program on Motivational Salience only at the 5 % significance level in an experimental group.
   • There is no effect of MBME program on Motivational Salience in a Control group.
   Therefore: the Research Hypothesis is accepted on Motivational Salience at the 5% of significance level.

7. MBME program is effective to increase MSEI significantly on Self-Development.
   • There is an effect of MBME program on MSEI significantly in an experimental group.
   • There is no effect of MBME program on MSEI in a Control group.
   Therefore: the Research Hypothesis is accepted on Self-Development.
6.13.3.2 Conclusions from the Major Findings

According to the finding, this study is concludes the following:

- MBME increases the flexibility by enhancing the capability of being bent.
- MBME improves the balance by increasing the ability to maintain a state of equilibrium.
- MBME improves responsiveness by decreasing the reaction time.
- MBME helps to reduce the rate of breathing, supporting relaxation.
- MBME on beauty/grace improves the extent to which participants paid attention to their appearance and did not affect their sense of self-worth based on their physical appearance.
- MBME improves a wide range of the different aspects of self-esteem – psychological changes through a physical treatment.

6.14 Discussion of the Results

The findings of the present study showed a positive association between the MBME program and the physical components measured.

These findings correspond to research by others. For example, concerning flexibility, Tracy et al (2013)³⁹ found that “Yoga subjects exhibited increased flexibility compared with control group.”

This study forms part of what may well be a major reassessment of the value of physical interventions, not only for physical outcomes but also for mental outcomes too.

The research findings in this study also showed the benefits beyond simply the body, but also the mind. Surprisingly, there is very little research done to date to demonstrate mental changes with movement interventions, although this is now changing, particularly in respect to education, where the benefits of the appropriate physical interventions can significantly affect academic performance (Sigfusdottir et al., 2007)⁴⁰ (Dwyer et al., 2001)⁴¹ (CDE 2005)⁴² (Wittberg et al., 2012)⁴³.

In the non-education field, some studies are now able to show the benefits of physical interventions on mental health. One such study, Posadzki et al. (2010)⁴⁴ conclude that, “The two alternative therapies (Yoga and qigong) can prevent mental health disorders such as anxiety, depression and, minimize mental health disruptions such as stress and poor quality of life.”
The same authors, Posadzki et al (2011)\textsuperscript{45} reflect this new understanding by proposing integrating massage into psychotherapy for mental health benefits.

Another study, Yvonne et al. (2012)\textsuperscript{46} concluded that, “The present findings support that qigong has a positive effect on reducing stress and anxiety and enhancing body–mind well-being. In this study, we restructured a traditional qigong exercise into a systematic workout structure and demonstrated its positive impact on mood regulation as illustrated by both psychological and physiological measures.”

In the present study, most of the outcomes measured showed significant changes in the experimental group compared with the control group as anticipated in the original hypothesis.

The study results have revealed that the physical activities of MBME program manage and regulate psychological factors. So mind factors managed through the physical activities of MBME program that contains 5 components:

- **Flexibility**
- **Balance**
- **Breathing**
- **Awareness**
- **Beauty/Grace**

All the 5 components have their own treatment, different exercise routine and manage 6 body factors (Flexibility, Balance, Breathing, Awareness, Self-Evaluative Salience, Motivational Salience) and 11 mind factors (Global self-esteem, Competence, Lovability, Likeability, Self-Control, Personal Power, Moral Self-Approval, Body Appearance, Body Functioning, Identity Integration, Defensive Self-Enhancement).

The study results have confirmed that MBME program is effective as a mind/body intervention.

- MBME increases the flexibility.
- MBME improves the balance.
- MBME improves responsiveness.
- MBME helps to reduce the rate of breathing, supporting relaxation.
- MBME on beauty/grace improves the extent to which participants paid attention to their appearance and did not affect their sense of self-worth based on their physical appearance.
• MBME improves a wide range of the different aspects of self-esteem – psychological changes through a physical treatment.

6.15 Suggestions and Recommendations Based on the Results of the Study

In view of previous findings and discussions, the study has come up with recommendations suited to each aspect of this interdisciplinary study: movement education – psychomotor considerations, psychological considerations, management theory, and self-development. The recommendations are as follows:

6.15.1 Movement Education – Psychomotor Considerations

Movement Education should be considered for inclusion in all major student syllabi, not simply because of the need for exercise, but as part of enhancing their academic achievements.

Movement education should be considered much more than simply physical exercise benefitting only the body. The psychomotor considerations are at least as important and valuable for educational purposes.

6.15.2 Psychological Considerations

It is recommended that the psychological benefits that can accrue from movement interventions, as shown in this study, should be an integral part of the decision about introducing these programs into educational settings.

It is recommended that for the optimal psychological outcomes, any movement intervention has to be practiced on a regular basis, in the same location, at the same time.

6.15.3 Management Theory: Self-Development

From the management theory, it is important to consider while conducting the program focus on adaptability, receptivity, and acceptability to change.

It is recommended to explain to participants an understanding of the unity of the body mind. They need to understand that they are not just “moving the body.” The moving body is also moving them!

Self-development is an individual process and is the most valuable outcome of education. The best results will depend on the quality of the individual’s participation.

It is important that participants understand that self-development is a continuous process, and the facilitator should encourage each participant to take responsibility for their own long-term self-development.
6.16 Contribution to the Knowledge

- This study provides valuable information on mind-body intervention. The knowledge evolved from an understanding of mind-body dynamics. In particular that changes in the mind-body complex can happen more easily by starting with the body first rather than approaching the mind directly. This study will contribute to realizing the importance of physical activities in the field of education.

- The findings of this study will also contribute to the management field as the program is specifically designed to be simple and enjoyable for ordinary modern people for physical wellbeing, mental relaxation and stress management.

- This study will contribute towards enriching the existing literature on mind-body intervention in physical education. It provides valuable information to researchers interested in investigating mind-body intervention in education.

- This research has generated valuable data on the role of educating body and the mind through physical intervention. This can be included in any curriculum for learning, understanding and benefiting from self-management as a part of education.

- By creating a program that is enjoyable and easy to learn, participants can be encouraged to continue the program on their own, empowering them to take responsibility for the management of their own mind/body development: self-development.

6.17 Suggestions for Further Research

While undertaking the study a number of issues emerged which require studies to be undertaken to bring these issues into perspective.

Therefore the study recommends that further studies can be undertaken on:

1. Whether different psychological outcomes can be provoked by different movement programs.
2. Developing a psychological instrument for use specifically with movement / educational programs.
3. Repeat the study using a single component to identify exactly which outcome is related to which component.
4. This particular mind-body intervention (MBME program) can be developed by further research in many ways investigating many possible relationships. If one of the main points of the intervention is to support the participants ability to respond to change, this intervention itself will also have to change as time goes on!
References


18 **Michel, E. (2012, November).** Motor Coordination and Executive Functions, v54 n11 p971, Germany: *Developmental Medicine & Child Neurology*.


