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THE EFFECTIVE HYDROTHERAPY SYSTEM FOR WEIGHT REDUCTION AND QUALITY OF LIFE IMPROVEMENT AMONGST OBESE MALAYSIAN

By
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Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
In Fulfilment of the Requirement for the Degree of Doctor of Management (D.Mgt)
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ABSTRACT

Malaysia has the highest rate of obese people within the Southeast Asia region and placed sixth in the Asia Pacific. Obesity not only impacts the person’s mobility and health but also linked to absenteeism and medical leaves affecting the overall workforce productivity and efficiency. Physical activity is one of the methods in addressing obesity, and water-based activity (hydrotherapy) is recognised as an extension of the traditional land-based physical activity. This research experiments two types of hydrotherapy system, active or passive which are available in hospital settings, public places, treatment centres or even in individual homes. Subjects of both sexes and diverse age ranges were requested to immerse themselves in thermal water either exercising in large water pool within hospital setting or enjoy the high energy turbulent water movement in bath tub. The findings of the hydrotherapy sessions have shown encouraging results. Quantitative data was analysed with the help of descriptive statistics and paired sample t-test significant of pre and post hydrotherapy experiments. Qualitative data was analysed with the use of thematic analysis and specialised qualitative assessment software. This research reveals that hydrotherapy has improved subject’s mobility, flexibility, exercise capability, weight reduction and their quality of life. A well-managed hydrotherapy system within the Business Process Management (BPM) context can provide positive overall results. The major limitation of this research is to gain consent to conduct the experiment in the government hospitals, where the public seek medical treatment including obesity. Whilst the current research has given some insights on the effects of hydrotherapy on obesity treatment, future research could identify and assess hydrotherapy effectiveness in other obesity linked sedentary lifestyle diseases.

Keywords: active hydrotherapy, passive hydrotherapy, obesity, quality of life, weight reduction
ABSTRAK


Kata kunci: hidroterapi aktif, hidroterapi pasif, obesiti, kualiti kehidupan, pengurangan berat badan
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<tr>
<td>6MWT</td>
<td>6 Minutes’ Walk Test</td>
</tr>
<tr>
<td>AHT</td>
<td>Active Hydrotherapy</td>
</tr>
<tr>
<td>AQE</td>
<td>Aquatic Exercise</td>
</tr>
<tr>
<td>ASCM</td>
<td>American College Of Sports Medicine</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>BP</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>BP</td>
<td>Bodily Pain</td>
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<td>BPI</td>
<td>Business Process Improvement</td>
</tr>
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<td>BPM</td>
<td>Business Process Management</td>
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<td>BPMS</td>
<td>Business Process Management Systems</td>
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<tr>
<td>BPR</td>
<td>Business Process Re-engineering</td>
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<tr>
<td>BRRM</td>
<td>Bad Ragaz Ring Method</td>
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<tr>
<td>BT</td>
<td>Balneotherapy</td>
</tr>
<tr>
<td>CHF</td>
<td>Chronic Heart Failure</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence Intervals</td>
</tr>
<tr>
<td>CLBP</td>
<td>Chronic Lower Back Pain</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic Obstructive Pulmonary Disease</td>
</tr>
<tr>
<td>CPG</td>
<td>Clinical Practice Guidelines</td>
</tr>
<tr>
<td>CSF</td>
<td>Critical Success Factor</td>
</tr>
<tr>
<td>CPG</td>
<td>Clinical Practical Guideline</td>
</tr>
<tr>
<td>DBP</td>
<td>Diastolic Blood Pressure</td>
</tr>
<tr>
<td>DIY</td>
<td>Do-It-Yourself</td>
</tr>
<tr>
<td>GDD</td>
<td>Global Development Delay</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GH</td>
<td>General Health</td>
</tr>
<tr>
<td>H</td>
<td>Height</td>
</tr>
<tr>
<td>HC</td>
<td>Hip Circumference</td>
</tr>
<tr>
<td>HIE</td>
<td>Health Insurance Experiment</td>
</tr>
<tr>
<td>HR</td>
<td>Heart Rate</td>
</tr>
<tr>
<td>HRC</td>
<td>Hospital Rehabilitasi Cheras</td>
</tr>
<tr>
<td>HUKM</td>
<td>National University Hospital Malaysia</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>IQOLA</td>
<td>International of Life Assessment</td>
</tr>
<tr>
<td>LDL</td>
<td>Low-Density Lipoprotein</td>
</tr>
<tr>
<td>MASO</td>
<td>Malaysia Association Study of Obesity</td>
</tr>
<tr>
<td>MCS</td>
<td>Mental Component Summary</td>
</tr>
<tr>
<td>MH</td>
<td>Mental Health</td>
</tr>
<tr>
<td>MHIQ</td>
<td>McMaster Health Index Questionnaire</td>
</tr>
<tr>
<td>MHU</td>
<td>Mobile Health Unit</td>
</tr>
<tr>
<td>MI</td>
<td>Myocardial Infarction</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MONICA</td>
<td>Multinational Monitoring of Trends And Determinants In Cardiovascular Disease</td>
</tr>
<tr>
<td>MOS</td>
<td>Medical Outcome Study</td>
</tr>
<tr>
<td>MR</td>
<td>Metabolic Rate</td>
</tr>
<tr>
<td>NCD</td>
<td>Non Communicable Disease</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>NHMS</td>
<td>National Health Morbidity Survey</td>
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<tr>
<td>NHP</td>
<td>Nottingham Health Profile</td>
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<tr>
<td>NMRR</td>
<td>National Medical Research Register</td>
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<tr>
<td>OM</td>
<td>Operation Management</td>
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<tr>
<td>OP</td>
<td>Operation Management</td>
</tr>
<tr>
<td>PCS</td>
<td>Physical Component Summary</td>
</tr>
<tr>
<td>PF</td>
<td>Physical Functioning</td>
</tr>
<tr>
<td>PHT</td>
<td>Passive Hydrotherapy</td>
</tr>
<tr>
<td>PNF</td>
<td>Proprioceptive Neuromuscular Facilitation</td>
</tr>
<tr>
<td>QoL</td>
<td>Quality of Life</td>
</tr>
<tr>
<td>RE</td>
<td>Role Emotions</td>
</tr>
<tr>
<td>RP</td>
<td>Role Physical</td>
</tr>
<tr>
<td>RTC</td>
<td>Regional Transformation Centre</td>
</tr>
<tr>
<td>SBP</td>
<td>Systolic Blood Pressure</td>
</tr>
<tr>
<td>SCM</td>
<td>Supply Chain Management</td>
</tr>
<tr>
<td>SF</td>
<td>Social Functioning</td>
</tr>
<tr>
<td>SF-36V2</td>
<td>Short Form-36 version 2 (Health Survey Questionnaire)</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>SIP</td>
<td>Sickness Impact Profile</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Science</td>
</tr>
<tr>
<td>STEPS</td>
<td>STEPwise Approach to Surveillance</td>
</tr>
<tr>
<td>SWT</td>
<td>Shuttle walk test</td>
</tr>
<tr>
<td>TQM</td>
<td>Total Quality Management</td>
</tr>
<tr>
<td>Tre</td>
<td>Rectal Temperature</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>US</td>
<td>United States</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>UTC</td>
<td>Urban Transformation Centre</td>
</tr>
<tr>
<td>UUM</td>
<td>Universiti Utara Malaysia</td>
</tr>
<tr>
<td>VO₂</td>
<td>Maximal oxygen consumption</td>
</tr>
<tr>
<td>VT</td>
<td>Vitality</td>
</tr>
<tr>
<td>W</td>
<td>Weight</td>
</tr>
<tr>
<td>WC</td>
<td>Waist Circumference</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WHR</td>
<td>Waist Hip Ratio</td>
</tr>
<tr>
<td>WR</td>
<td>Weight Reduction</td>
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</table>
CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In today’s tough competitive business environment resulted from rapid variance in technology and globalization, organizations are facing continuous pressure to improve their business process efficiency and effectiveness. Many organisations fail in their attempt to adopt business process management (BPM) (Buh, Kovačič, & Indihar Štemberger, 2015). The real challenge in bringing change is trade-off issue (Caron & Vanthienen, 2015). In this economic and business climate, BPM is one of the most important topics in many organizations. If adopted successfully, it can add significant value and efficiency to the business processes and improve business performance, productivity and give competitive advantage to organization (Buh, Kovačič, & Indihar Štemberger, 2015; Indihar Štemberger, Bosilj-Vukšić, & Jaklič, 2009; Škrinjar, Bosilj-Vukšić, & Indihar Štemberger, 2008; Bai & Sarkis, 2013; Ortbach, Plattfaut, Pöppelbu, & Niehaves, 2011; Hung, 2006). Effective design and execution of BPM is far more important for modern business organizations (Aldin & de Cesare, 2011). BPM has been an effective concept for decades, its strategic role in operation is still important to be investigated with the perspective of Information Technology and Operation Management (Liu, Li & Zhao, 2009; Bititci U, Ackermann, F., Ates, A., Davies, John D., Gibb, Stephen, MacBryde, J., 2011).

Managing operations have evolved substantially over time in response to changing priorities and paradigms (Gunasekaran and Ngai, 2012). The healthcare industry represents an important sector within services. However, little is known about the current state of research into healthcare Operation Management (OM) and Supply
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