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**Cyclo-ssage Pro-Personal Therapy System (PPTS)**  
**Enhances treatment of Diabetes Mellitus.**  
**By Dr. P. Heaton-Ph.D.**  
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**Introduction.**

The inability of the body systems to adequately control the blood sugar levels is a serious debilitating disorder with severe multi-organ consequences. This condition also known as diabetes mellitus was first described as early as 236 BC by appollonius of Memphis.

Worldwide, nearly ten percent of the entire adult population are affected by the condition and it's complications. The cost of hospital admissions and medication treatment for diabetes mellitus in 2014 worldwide, compounded healthcare financial strains, with estimates approaching five hundred billion pounds. More concerning is the strong correlation between the rising rates of obesity and diabetes mellitus. For this group, there is a higher preponderance for the type 2 diabetes with a ninety percent affection of all subjects. The fat distribution in the obese population that is critical to increasing the risk of type 2 diabetes mellitus is predominantly truncal and peritoneal, that is central obesity, as opposed to peripheral obesity that predominates in the limbs.

Furthermore, a condition described as pre-diabetes affects a significant proportion of the morbid obesity patient cohort, and may progress to diabetes mellitus within a few years if left uncontrolled.

The most compelling evidence to date from current research identifies the strongest predicting factor for an individual risk within all communities in which the rates of diabetes mellitus are highest remains, lack of exercise.

Uncontrolled, or failure to achieve sufficient control of diabetes mellitus can rapidly progress to deterioration of function in multiple organ systems leading to coma, kidney failure, ischaemic heart disease, stroke, increased predisposition to infections, impairment of vision, irreversible nerve and blood vessel damage.

**Symptoms and signs.**

Fatigue is the initial complaint most diabetic patients experience. This is due to their inability to utilise glucose efficiently. Excessive hunger (polyphagia) compounds that inability further, but is also a consequence of that inability. Excessive urination (polyuria) is a consequence of the failure of the water absorption mechanism of the kidneys. Because such large volumes of urine are passed in this condition, due primarily to the kidney's inability to reabsorb water, water losses from the body compartments cannot be adequately compensated, and thirst ensues (polydipsia).

**Diagnosis.**

This is done from blood test criteria set on the basis of standardised values of the blood sugar and glycosylated haemoglobin levels. These values also allow the pre-diabetes and glucose impaired tolerant individuals to be identified, and appropriate intervention to be instituted before progression to diabetes.

**Pathophysiology of diabetes mellitus.**

The primary function of absorbed intestinal glucose from a meal is to be utilised for energy. This maybe an instantaneous or impending requirement. Either way, the absorbed glucose molecules are transported into the

arterial circulation. Consequentially, specialised cells of the pancreas known as beta cells, release the hormone insulin into the arterial circulation in response to the elevated blood glucose level.

Instantaneous utilisation requires that the glucose molecules are transported to glucose uptake sites such as muscle cells for rapid generation of cellular energy in the form of ATP (adenosine triphosphate). Insulin is an agonist of this transportation mechanism.

Impending requirement of energy is delivered by the storage of absorbed glucose molecules in cells such as the hepatic cells of the liver (as glycogen- a complex chain of glucose molecules), fat cells and other soft tissues.

Excess storage from excess intake generates large amount of adipose tissues (fat cells). Failures in any step from transportation of glucose, to secretion of insulin, and response of cells to the secreted insulin result in diabetes mellitus.

A sustained elevation of blood sugars is a consequence of such failures, and predisposes to lactic acidosis, further compounding the metabolic derangement that is diabetes mellitus.

### **Treatment.**

Alongside prescribed medications (Insulin and or oral anti-hyperglycaemics), patient education of the condition is paramount for effective treatment. A lifestyle change in the approach to exercise and nutrition are key to success.

The utilisation of innovative technology such as with the Cyclo-ssage PPTS can optimise diabetic control, decreasing the risk of diabetic complications and in some cases, eliminate the need for medications in the long term.

### **Cyclo-ssage PPTS innovative technology in the exercise prescriptive prevention and treatment of diabetes mellitus.**

Improving overall fitness through exercise programs has been reported to improve control of blood sugar level in diabetic cohorts. Aerobic, more than anaerobic exercises have been shown to have greater impact on blood sugar monitoring. Additionally, the benefits of aerobic therapy on the PPTS impact positively on both the posterior and anterior chain musculature. The primary mechanisms involve improvement of muscle blood flows during and post therapy. Sustained flow mechanics on the PPTS, within the proximity of the larger muscle groups of the limbs will decrease local limb fat content.

An established risk for development of diabetes mellitus and its complications is the patient's peritoneal fat content, a cofactor for central-truncal obesity. Prescriptive therapies on the PPTS utilising hip endurance muscle movements (HEMM), central and oblique muscle activations (COMA) have generated greater response to therapy. That program can also be incorporated with the hip lift therapies on the PPTS for further optimisation of the posterior chain.

The uptake of exercise in some communities with the highest incidence of diabetes mellitus is lower than five percent. When innovative technology such as with Cyclo-ssage PPTS is introduced, we have noted a significantly increased uptake.

**Dr. P. Heaton. Ph.D.**