To,

19th June, 2017

The Vice-Chancellor
Conference Series.com

Subject: **Request For The Presentation and Working.**

Dear Sir,

Respectfully and humbly, I would like to state that, I have been continuously doing on Applied Scientific Medical Research 'ASMR' for a long interval. In the course of time I had able to find out some interesting results with a lot of devotion and hard work & finally able to explore new **Auto Cardiac Digital Device ACDD**. Also I have derived Applied Geometry Mathematical **Engineering Formula** with Innovated Distance Measure **Equipment/Device** & I wrote **Guinness Book of world Record**. Although I have passed General Medicine in PCL nowadays I'm going on Applied Scientific Medical Research (ASMR) coding find out "Alternative Generic Name of Drugs AGND by SBS Code Formula. Now funding "Determination of **Standard Body Value**, Auto Cardiac Digital Device and **Correction of the Weakness Point DSBV-CWP**" I have presentation at Ministry of Health, Nepal "Nepal Health Research Council NHRC" with NHRC Research Team. I am originally from Kalikot, Nepal. I was really interested in Applied Scientific Medical Research since I passed grade eight I was looking of an opportunity to take research. I got a chance to take research after my SLC exam which inspired me in this field. I want presentation with your university. Thus, for the scientific feedback of this research, I've applied with this application. I'd look for getting positive response from your honor.

……..

Yours Sincerely,

Basant Kumar Shahi "Spring"

Young Scientist

Award 2015 A.D. Paris, France

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Personal Details



Name:**Basant Kumar Shahi "Spring"**
Date of Birth: 10th March 1997
Father's Name: Bharat Bahadur Shahi
Mother's Name: Laxmi Devi Shahi
Permanent Address: Manma-4, Kalikot Nepal
Temporary Address: Kapan, Kathmandu Nepal
Sex: Male
Marital Status: Unmarried
Nationality: Nepalese
Religion: Hinduism
Language Known: Nepali & English
Contact: +977-9843494679 (Available on Viber & Whatsapp)

Academic Certificate

Level	Board/Institute	Passed Year	GPA
School Leaving Certificate SLC	Shree Panche Dev Higher Secondary Manma Kalikot Government School Remote Area	2012	A+
General Medicine HA Health Assistance	Martyr Memorial Institute of Science & Technology MMIST	2015	A+

Research Purpose in 14-16 year Old

In Mathematics:

Applied geometry mathematical engineering formula (Find out)
Alternative Distance Measured Equipment (Prepared)

Research Purpose in 16-19 year Old

In Medicine:

Alternative Generic Name of Drugs AGND by SBS- Code Formula
Now Research: Ongoing Cardiac.
Aims: Good Medical Researcher Scientist & Social Worker

Recommendation Research

Nepal Academy of Science and Technology (NAST)
Nepal Health Research Council (NHRC) Government of Nepal
Ministry of Science and Technology
Tribhuvan University Central Department of Education
Advance Mathematics Studies in France
National Sport council
Council for Mathematics Education

INTRODUCTION

Name:. BASANT KUMAR SHAHI "SPRING"
Date of Birth: 10th March 1997
Address: Manma-4, Kalikot Nepal
Father's Name: Mr. Bharat Bahadur Shahi
Mother's Name: Mrs. Laxmi Devi Shahi
From: Remote Area (Kalikot)
Family status: Privileged Crooked
Derived: Applied Geometry Mathematical Engineering Formula
Derived: SPRING'S LAW
Deigned: Alternative Distance Measure Equipment/Device
Guinness Book of World Recorder: T.T ball and Pencils
President at:. Karnali Science &Technology Research Center (KSTARC)
Worked at: Nepal Health Research Council NHRC & NAST
Interested: Good Applied Scientific Medical Researcher and Physician as well as social worker
Young Applied Science & Technology Award from Paris 2015
AMNE Award from Australia 2016
Qualification: General Medicine in PCL
Phone no: +977-087-665125
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Government of Nepal

Nepal Health Research Council (NHRC)

Estd. 1991

Ref. No.: 1474



Date: 18 March 2016

To Whom It May Concern

This is to certify that **Mr. Basant Kumar Shahi (Spring Bachelor Shahi)** of Kalikot District Mid-Western, Nepal. He is an enthusiastic young Medical researcher he had been presented the out study topic **"Alternative Generic Name of Drugs"** AGND by SBS-Code Formula in Nepal Health Research Council on 17 March 2016 with NHRC research team.

He has good analytical skills, especially in Medical Research. He wants to pursue his higher studies in Medical Sciences (MBBS) for which I strongly recommend.

I wish him all the best for his future endeavors.

.....

Dr. Khem Bahadur Karki
Member-Secretary
(Executive Chairman)

Tel: +977 1 4254220, Fax: +977 1 4262469, Ramshah Path, PO Box: 7626, Kathmandu, Nepal
Website: http://www.nhrc.org.np, E-mail: nhrc@nhrc.org.np

NEPAL ACADEMY OF SCIENCE & TECHNOLOGY
CENTRAL OFFICE
NAST



June 1, 2016

To Whom It May Concern

I know Mr. Basant Kumar Shahi (Spring Bachelor Shahi) as a person who has interest in research. He contacted me with respect to research works. I am pleased to know that he has decided to study medicine. I am sure that he will be a very good medical professional in view of his inclination to research.

I herby request the concerned cured individuals and institutions to help him to the extent possible.

Prof. Dr. Jiba Raj Pokharel
Vice Chancellor

Address : Khumaltar, Lalitpur, Nepal, GPO Box 3323 Kathmandu, E-mail: Info@nastorg.np
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Date: 11/06/2014

Certificate of Presentation

This is to certify that **Mr. Spring Bachelor Shahi**, the son of Mr. Bharat Bahadur Shahi and Mrs. Laxmi Devi Shahi, Manma-4, Kalikot District, Nepal, presented his invention on "**finding the largest area square inscribed in a quadrant of a circle**". He gave presentation on his new invention to our Higher Secondary level students. His keen interest in doing Mathematics, patience in thinking and working continuously is praiseworthy.

I wish him a very bright future as a young Mathematician.

Himalayan WhiteHouse International College 2001 Kathmandu, Nepal

Yuvraj Sharma

CEO & Principal

Himalayan WhiteHouse International College

Regd. No. 70035/066/067

Affiliated to CTEVT and run by Sahid Smarak Public Health Co-operative Society Ltd.

MARTYR MEMORIAL INSTITUTE OF SCIENCE AND TECHNOLOGY (MMIST)

मार्टियर मेमोरियल इन्स्टिच्यूट अफ साइन्स एण्ड टेक्नोलोजी

Ref. No.

Date:-26-12-2014

To Whom it may concern

This is to certify that **Mr. Basant kumar shahi (Mr. Spring bachelor shahi)** ,son of Mr. Bharat Bahadur Shahi and Mrs.Laxmi Devi shahi a resident of kalikot district ,is a bonafide ,hard working ,extra ordinary student of our college **(Martyr Memorial Institute of Science & Technology)** who has been continuously contributing a lot in flourishing the name and fame of our college .we are really proud of him .He is a student of General medicine 3rd year .we have no negative comments regarding his discipline punctuality, honesty. He is one of the best students of our college.

We wish his successful bright future in the forthcoming days.

.....

Satya Narayan Yadav

Principal

Research Title:

“Determination of Cardiac Output and other necessary variables and thus interpret through Auto Cardiac Digital Device”

Abstract

Heart is one of the most important organs of the human body. One way to measure the heart function is to check cardiac output, looking at how much efficiently the heart is performing is tasks. Mathematically it is product of two variables i.e Stroke Volume and Heart Rate. One reason to determine someone’s cardiac output would be to monitor their cardiovascular function over time. Sometimes a cardiologist may need to calculate cardiac output to provide patients with information about how efficiently their hearts are pumping blood and delivering oxygen rich blood. Changes in cardiac output over months or years could indicate a change in the hearts ability to pump blood. It is important to first determine how well (or not) a person’s heart pumps blood while they are at rest. Cardiac Output (CO) is a hemodynamic parameter that plays a key role in several physiological equilibriums. For instance: it is the dynamic force that generates arterial blood pressure by combination with the systemic vascular resistance (SVR). Another example is the close interaction between Co, oxygen consumption (VO2) and peripheral oxygen extraction described by the "Fick" equation. There are different ways to measure the cardiac out of an individual but the methods of measurement are quite expensive and needs high resources which are always not practical. Thus here we have tried to find it out using simple body parameters.

Background of Study

As a result and for instance, systemic hypertension should not be managed without the knowledge of cardiac output because CO is a key contributor to the calculation of SVR which is essential in understanding and managing this pathology. Similarly, relying on VO2 only to evaluate the physiology of exercise is way too restrictive considering the importance of cardiac and peripheral parameters as potential limiting factors for human performance. CO, Stroke Volume (SV) and their components (preload, contractility, after load) need to be evaluated in dynamic manner. For instance, the rate of increase of SV and contractility during exercise differs considerably from a heart failure patient to an athlete. Abnormal trend patterns in SV during exercise are proven signs of cardiac function impairment (e.g. coronary artery disease). Another example: In critical care, fluid management is of paramount importance. Evolution and variation of SV are markers of fluid status and need, for instance during Passive Leg Raise test. Very unfortunately CO has so far been underused because of the invasive, cumbersome and inaccurate nature of the available measurement techniques. Their cost has also been a limiting factor. Cardiac output estimation is an important and much needed measurement for assessing patients in heart failure. In hypertension, it is vital for understanding the haemodynamic basis of the disease and the mode of action of drugs. Measurements of blood pressure and cardiac output provide the only means of estimating peripheral resistance. Of the available methods to determine cardiac output, thermo dilution is the most practical, although it has its difficulties and care has to be exercised in its use. When intra-arterial blood pressure measurements are needed, the dye-dilution Method is equally valid, and if respiratory techniques are available the Fick principle may also be used. Of

the non-invasive methods, none is yet developed to a stage suitable for general clinical use. Doppler velocimetry is the most promising technique, but it requires complex computer analysis and, as yet, can reliably be used only to measure changes in cardiac output in an individual. The technique has been assessed against the electromagnetic flow meter in man and gives reasonable accuracy and repeatability. Echocardiography and impedance cardiography are not yet satisfactory for clinical use; neither are the radionuclide methods, apart from the 'first pass' method, but this also needs further verification.

Statement of the Problem and Rationale / Justification:

Nepal is a developing country. Health is one of the main infrastructures of development. Unfortunately the health condition of the country is very poor. But why is this happening? Aren't we the citizen of country? Don't we have our health right? So, considering this we came to find out the economy is the major obstacle. One with poor economic back-ground couldn't citizen the available health services. And people living in rural area like Karnali region even couldn't imagine it. Thus realizing it, we have at least tried to mitigate the problem with our new invention of device namely; Auto Cardiac Digital Device which measures the vital body functions within few seconds without any need of complex phenomena.

Conceptual framework:

$$\text{H.R} \propto R.R \ldots\ldots\ldots\ldots\ldots\ldots\ldots (I)$$

During exercise, your adrenal gland increases production of adrenaline and noradrenaline that directly affect the heart and the ability to transport oxygen and

carbon dioxide throughout the body. The hormones then directly influence the sympathetic nerves to stimulate the heart to beat stronger for increased stroke volume and faster for increased heart rate and an overall increase in cardiac output.

Your heart rate, or pulse, is the number of times your heart beats in a minute. Depending on your age and level of physical fitness, a normal resting pulse ranges from 60 to 80 beats per minute. Your breathing rate is measured in a similar manner, with an average resting rate of 12 to 20 breaths per minute. Both your pulse and breathing rate increase with exercise, maintaining a ratio of approximately 1 breath for every 4 heartbeats.

$$H.R \propto B.T \ldots\ldots\ldots\ldots\ldots\ldots\ldots (II)$$

An increase in body temperature (BT) is followed by an increase in heart rate (HR) and respiratory rate (RR). Only a few studies have explored the magnitude of this increase. These studies all included young healthy study subjects not taking any medicine that influenced the cardiovascular system. We wished to investigate this relationship in a study group more representative of the acute patients we meet in an emergency department.

Body temperature is an independent determinant of heart rate, causing an increase of approximately 10 beats per minute per degree centigrade. Body temperature is also an independent determinant of respiratory rate. This quantification may help in the assessment of the hot and unwell child, to determine whether any tachycardia or tachypnoea is caused solely by fever, or whether there may be an element of concurrent shock.

the present study determined whether EEG and/or EMG recordings could be used to reliably define activity states in the Brazilian black and white tegu lizard (Tupinambis merianae) and then examined the interactive effects of temperature and activity states on strategies for matching O2 supply and demand. In a first series of experiments, the rate of oxygen consumption ([Formula: see text]), breathing frequency (f R), heart rate (f H), and EEG and EMG (neck muscle) activity were measured in different sleep/wake states (sleeping, awake but quiet, alert, or moving). In general, metabolic and cardio-respiratory changes were better indictors of the transition from sleep to wake than were changes in the EEG and EMG. In a second series of experiments, the interactive effects of temperature (17, 27 and 37 °C) and activity states on f R, tidal volume (V T), the fraction of oxygen extracted from the lung per breath (FIO2-FEO2), f H, and the cardiac O2 pulse were quantified to determine the relative roles of each of these variables in accommodating changes in [Formula: see text]. The increases in oxygen supply to meet temperature- and

activity-induced increases in oxygen demand were produced almost exclusively by increases in f H and f R. Regression analysis showed that the effects of temperature and activity state on the relationships between f H, f R and [Formula: see text] was to extend a common relationship along a single curve, rather than separate relationships for each metabolic state. For these lizards, the predictive powers of f R and f H were maximized when the effects of changes in temperature, digestive state and activity were pooled. However, the best r (2) values obtained were 0.63 and 0.74 using f R and f H as predictors of met abolic rate, respectively.

$$H.R \propto \frac{1}{B.W} \quad \text{..... (III)}$$

Heart rate is, also known as pulse, is the number of times a person's heart beats per minute. A normal heart rate depends on the individual, age , body weight, heart condition, whether the person is sitting or moving, medication use and even sir tempura. Even emotions can have an impact on heart rate. For example getting excited or scared can increase the heart rate. But most importantly, getting fitter lowers the heart rate muscles work more efficiently.

Your heart is a muscle and just like strengthening other muscles by going activities, you can do the same thing with your heart. If you area n athlete and you're training, or if you are having symptoms such as dizziness, then knowing your heart rate is important, so increase the heart rate also decrease the body weight.

$$H.R \propto C.O \quad \text{..... (IV)}$$

Every minute, what you're really doing is increasing your cardiac output. And, from our equation, we see that this means you either increased your heart rate or your stroke volume or both.

The function of the heart is to drive blood through the circulatory system in a cycle that delivers oxygen, nutrients and chemicals to the body's cells and removes cellular waste. Because it pumps out whatever blood comes back into it from the venous system, the quantity of blood returning to the heart effectively determines the quantity of blood the heart pumps out – its cardiac output, Q. Cardiac output is classically defined alongside stroke volume (SV) and the heart rate (HR) as:

Ten young (average age 20 years) healthy male volunteers performed the Valsalva maneuver (40 mmHg for 15 seconds) in the supine and the upright position. The heart rate (HR), stroke volume (SV) and the cardiac index (CI) were registered

using ECG and impedance cardio graph. During the expiratory strain of the Valsalva maneuver the HR increased about equally in the two positions while the decreases in the SV and the CI were in the supine position significantly greater than in the upright position. The CI decreased to equal levels in both positions after 15 seconds of strain. The rise in the HR due to the expiratory strain did not correlate significantly with the decrease in the CI in either position. The correlation between the HR rise and the SV decrease was almost significant (p less than 0.05) in the supine position and significant (p less than 0.01) in the upright position after 5 seconds of strain but not after 10 or 15 seconds. These observations suggest that the relationship between the rise in the HR and the decrease in the venous return does not remain constant during 15 seconds of expiratory strain. Perhaps the cardiopulmonary baroreceptor reflexes affect the HR after five seconds of strain more than they do after 10 or 15 seconds of strain.

Cardiac function curves are widely accepted to apply to humans but are not established for the entire range of filling of the heart that can be elicited during head-up (HUT) and head-down tilt (HDT), taken to represent minimal and maximal physiological filling of the heart, respectively. With the supine resting position as a reference, we assessed stroke volume (SV), cardiac output (CO) and filling of the heart during graded tilt to evaluate whether SV and CO are maintained during an assumed maximal physiological filling of the heart elicited by 90 degrees HDT in healthy resting humans.

From supine rest to 60 degrees HUT, SV and CO decreased 23 ml [confidence intervals (CI): 16-30; P<0.001; 23%] and 0.9 l/min (0.4-1.4; P<0.0001; 14%), respectively, but neither SV nor CO changed during HDT up to 70 degrees. However, during 90 degrees HDT, SV decreased 12 ml (CI: 6-19; P<0.0001; 12%), with an increase of 21 ml (9-33; P=0.002; 16%) in LVEDV because HR increased 3 bpm and CO decreased 0.5 l/min (ns).

This study confirmed that SV and CO are maximal in resting, supine, healthy humans and decrease during HUT. However, 90 degrees HDT was associated with increased LVEDV and induced a reduction in SV.

Combination of the all equations we get,

$$H.R \propto \frac{B.T * R.R * C.O}{B.W}$$

C.O. = $\frac{H.R*B.W}{K*B.T*R.R}$

H.R= $K\frac{B.T*R.R*C.O}{B.W}$

K = $\frac{\boldsymbol{H.R*B.W}}{\boldsymbol{R.R*B.T*C.O}}$

Where K is a supporting unit of the Cardiac Output

$$K = \frac{1}{2}\sqrt{\left[\sqrt{\frac{(B.W)^2 * R.R}{H.R * B.T}}\right]}$$

Unit: Kg/0oc

Mathematical prove:

$$K = \frac{1}{2}\sqrt{\left[\sqrt{\frac{(B.W)^2 * R.R}{H.R * B.T}}\right]}$$

Both sides square, we get

K2= $\left\{\frac{1}{2}\sqrt{\left[\sqrt{\frac{(B.W)^2*R.R}{H.R*B.T}}\right]}\right\}^2$ …….. (V)

4K2= $\sqrt{\left(\frac{B.W^2*H.R}{H.R*B.T}\right)}$

Again both sides square

(4K2)2= $\left\{\sqrt{\left(\frac{B.W^2*R.R}{H.R*B.T}\right)}\right\}^2$

16K2= $\frac{(B.W)^2*R.R}{H.R*B.T}$

$$K2=\frac{1}{4}\frac{B.W}{\sqrt{\left(\frac{H.R*B.T}{R.R}\right)}}$$

$$K=\frac{H.R*B.W}{R.R*B.T*C.O}$$

Both sides square

$$K2=\left(\frac{H.R*B.W}{R.R*B.T*C.O}\right)^2$$

$$K2=\frac{(H.R)^2*(B.W)^2}{(C.O)^2*(B.T)^2*(R.R)^2}$$

Put the value K2 equation (v) we get,

$$\frac{1}{4}\frac{B.W}{\sqrt{\left(\frac{H.R*B.T}{R.R}\right)}}=\frac{(H.R)^2*(B.W)^2}{(C.O)^2*(B.T)^2*(R.R)^2}$$

$$\frac{1}{2\sqrt{\left(\frac{H.R*B.T}{R.R}\right)}}=\frac{(H.R)^2*B.W}{(C.O)^2*(B.T)^2*(R.R)^2}$$

Both sides square

$$\frac{1}{16\left(\frac{H.R*B.T}{R.R}\right)}=\frac{H.R^4*B.W^2}{C.O^4*B.T^4*R.R^4}$$

$$\frac{R.R}{16*H.R*B.T}=\frac{H.R^4*B.W^2}{C.O^4*B.T^4*R.R^4}$$

$$(C.O)4=\frac{16*(H.R)^5*(B.W)^2}{(R.R)^5*(B.T)^3}$$

$$(C.O)2=\frac{4*(H.R)^2*B.W}{(R.R)^5*(B.T)^3}$$

$$(C.O)2=\frac{4*(H.R)^2*B.W}{(R.R)^2*B.T}\sqrt{\frac{H.R}{R.R*B.T}}$$

$$\mathbf{C.O = 2\frac{H.R}{R.R}\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}\ liter/min}$$

$$\text{Stroke Volume (S.V.)} = \frac{C.O}{H.R}*1000$$

$$\text{Stroke Volume (S.V.)} = \frac{2\frac{H.R}{R.R}\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{H.R}*1000$$

$$\text{Stroke Volume (S.V.)} = \frac{\frac{2000}{R.R}\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{}$$

$$\text{Stroke Volume (S.V.)} = \frac{2000}{R.R}\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}\ ml/beat$$

$$\text{Cardiac Index (C.I)} = \frac{C.O}{BSA}$$

$$\text{Cardiac Index (C.I)} = \frac{2\frac{H.R}{R.R}\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{B.W*B.H}*36$$

$$\mathbf{Cardiac\ Index\ (C.I) = \frac{72*H.R\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{B.W*B.H*R.R}\ l/min/m2}$$

$$\text{Stroke Volume Index (S.V.I)} = \frac{C.I}{H.R}*1000$$

Stroke Volume Index (S.V.I) = $\frac{72*H.R\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{\frac{B.W*B.H*R.R}{H.R}}$*1000

Stroke Volume Index (S.V.I) = $\frac{72000*H.R\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{B.W*B.H*R.R*H.R}$

Stroke Volume Index (S.V.I) = $\frac{72000\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{B.W*B.H*R.R}$ ml/m2/beat

Body Surface Area (B.S.A) = $\frac{C.O}{C.I}$

Body Surface Area (B.S.A) = $\frac{2\frac{H.R}{R.R}\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{\frac{72*H.R\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{B.W*B.H*R.R}}$

Body Surface Area (B.S.A) = $\frac{B.W*B.H}{36}$ **m2**

Total Blood Volume (TBV)

TBV$\propto \frac{1}{\left(\frac{H.R*B.W}{R.R*B.T}\right)}$ …….. (VI)

TBV$= K\frac{1}{\left(\frac{H.R*B.W}{R.R*B.T}\right)}$

(Where K is just supporting of the Total Blood Volume TBV)

TBV $= \frac{K}{\left(\frac{H.R*B.W}{R.R*B.T}\right)}$

TBV= $\frac{K(R.R*B.T)}{(H.R*B.W)}$

$$(\mathbf{TBV}) = \frac{\mathbf{K} * \boldsymbol{R.R} * \boldsymbol{B.T}}{\boldsymbol{H.R} * \boldsymbol{B.W}}$$

$$(\mathbf{TBV}) = \frac{\mathbf{K} * \boldsymbol{R.R} * \boldsymbol{B.T}}{\boldsymbol{H.R} * \boldsymbol{B.W}}$$

$$\mathbf{K} = \frac{\frac{(\boldsymbol{B.W})^2 * \boldsymbol{H.R}}{\boldsymbol{R.R} * \boldsymbol{B.T}}}{2\sqrt{\left(\frac{\boldsymbol{B.W}}{2}\right)}} \text{ kg/0}^c$$

$$\mathbf{K} = \frac{\boldsymbol{H.R} * \boldsymbol{B.W}^2}{\boldsymbol{R.R} * \boldsymbol{B.T} * 2\sqrt{\left(\frac{\boldsymbol{B.W}}{2}\right)}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ (VII)}$$

K value put in equation (VI) we get,

K= $\frac{H.R*R.R*B.T*B.W^2}{R.R*B.T*H.R*B.W*2\sqrt{\left(\frac{B.W}{2}\right)}}$

K = $\frac{B.W}{2\sqrt{\left(\frac{B.W}{2}\right)}}$

Both side square we get,

(K)2= $\left(\frac{B.W}{2\sqrt{\left(\frac{B.W}{2}\right)}}\right)2$

4(K)2= $\frac{(B.W)^2}{\frac{B.W}{2}}$

$\frac{2(B.W)^2}{B.W}$ = 4K2

$2(B.W)$= 4K2

K= $\sqrt{\left(\frac{B.W}{2}\right)}$

Total Blood Volume TBV: K$\left(\frac{B.H}{2}\right)$

$$TBV= \sqrt{\left(\frac{B.W}{2}\right)} * \left(\frac{B.H}{2}\right)$$

$$TBV= B.H\sqrt{\left(\frac{B.W}{2*4}\right)}$$

$$\boxed{TBV= B.H\sqrt{\left(\frac{B.W}{8}\right)}}$$

Total Red Cell Volume (TRCV):

$$TBV*\frac{45}{100}$$

$$TRCV= B.H\sqrt{\left(\frac{B.W}{8}\right)}*\frac{45}{100}$$

$$TRCV= B.H\sqrt{\left(\frac{B.W*2025}{8*10000}\right)}$$

$$TRCV= B.H\sqrt{\left(\frac{B.W*81}{3200}\right)}$$

$$\boxed{TRCV= B.H\sqrt{\left(\frac{B.W}{39.50}\right)}\ liter}$$

Total Plasma Volume TPV:

$$TPV= B.H\sqrt{\left(\frac{B.W}{8}\right)}*\frac{55}{100}$$

$$TPV = B.H\sqrt{\left(\frac{B.W*3025}{80000}\right)}$$

$$TPV = B.H\sqrt{\left(\frac{B.W*121}{3200}\right)}$$

$$TPV = B.H\sqrt{\left(\frac{B.W}{26.45}\right)}\ liter$$

Total Blood Volume in Acute Hemorrhage:

Tachycardia:

$$TBVT = TBV* \left[\sqrt{\left(\frac{R.R+B.W}{H.R}\right)}\right] liter$$

Bradycardia:

$$TBVB = \frac{TBV}{\sqrt{\left(\frac{R.R+B.W}{H.R}\right)}}\ liter$$

S.N.	Finding Formula
1.	Cardiac Output (C.O) $= 2\frac{H.R}{R.R}\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}$ **liter/min**
2.	Stroke Volume (S.V.) $= \frac{2000}{R.R}\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}$ ***ml/beat***

3.	Cardiac Index (C.I) = $\frac{72*H.R\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{B.W*B.H*R.R}$ *l/min/m2*
4.	Stroke Volume Index (S.V.I) = $\frac{72000\sqrt{\left(\frac{B.W}{B.T}\right)\sqrt{\left(\frac{H.R}{R.R*B.T}\right)}}}{B.W*B.H*R.R}$ ml/m2/beat
5.	Body Surface Area (B.S.A) = $\frac{B.W*B.H}{36}$ m2
6.	Total Blood Volume (TBV)= B.H$\sqrt{\left(\frac{B.W}{8}\right)}$ liter
7.	Total Red Cells Volume (TRCV)= B.H$\sqrt{\left(\frac{B.W}{39.50}\right)}$ liter
8.	Total Plasma Cells Volume (TPV)= B.H$\sqrt{\left(\frac{B.W}{26.45}\right)}$ liter
9.	Total Blood Volume in Tachycardia Acute Blood Lo TBVT= TBV$*\left[\sqrt{\left(\frac{R.R+B.W}{H.R}\right)}\right]$ liter
10.	Total Blood Volume in Bradycardia Acute blood lo TBVB= $\frac{\text{TBV}}{\sqrt{\left(\frac{R.R+B.W}{H.R}\right)}}$ liter **Auto Cardiac Digital Device Designed**



Research Objectives / purpose / aim of the study:

General to find out the cardiac output **within five seconds**, using simple body parameters,

Specific To find out Stroke Volume To find out Stroke Volume Index To find out Body Surface Area To find out Total Blood Volume To find out Total Plasma Volume To find out Red Blood Cells Volume To find out

Blood Volume in Tachycardia Acute Blood loss To find out Blood Volume in Bradycardia Aacute Blood loss.

Research Design and Methodology Research Method Combined Study Variables:

Heart Rate, Respiratory Rate, Body Temperature, Body Weight.

Result:

Successfully apply on human body parts 96.125% done from 451 out of 500 patients investigation without any risk of patients