Effect of Ritus on Bala as per the Sutra: “Adavante Cha...Nirdiset” - An applied Study

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Unique concept of the *Kala*, the invincible and unavoidable factor influences every aspect of our life right from the birth to death*.

*Kala* is also accepted to be responsible for the *Bala* in its broad sense and affect the physiology and the pathology as well.
• **Charaka** and **Sushruta** have divided the whole **Samvatsara** into two groups as per the position and strength of the Sun and Moon namely **Adana** and **Visarga Kala**.

• They affect each and every aspect of the human physiology because our body has a Biological Clock called Circadian Rhythm based on the Kala.

• ‘**TasyashitiyamAdhyayam**’ shows inter relationship between **Bala** and **Kala**.

*Cha.Su.6/5*
This sutra* says Bala is influenced by the Kala.

Awareness for physical, mental & spiritual fitness is increasing, especially for physical fitness.

During the whole year the working capacity of the body does not remain the same. Bala varies according to Kala, so this concept needs to be elaborated and explained as per Ayurvedic as well as Modern point of view.
Material and Methods

For this study, three types of materials were used:

1) The Literary Materials

2) Sub clinical Materials

3) Investigational materials
The Literary Materials

- References of *Kala & Bala*, have been collected through various Ayurveda texts specially from *Brihattrayi* and available commentaries on it.

- Related portion of modern medical & basic sciences have also been compiled and considered.
Sub-clinical includes the Bala assessment profile

For the Bala assessment, a detailed research-proforma and specific scoring pattern has been developed and used to assess the various aspects of Bala based on Dashavidha Atura-Pariksha as well as modern clinical direction.

Some modern parameters & procedures such as Body Mass Index (B.M.I.), Peak Expiratory Flow Rate (P.E.F.R.) have also been used for the assessment of the same.
Investigational materials, including the laboratory records (Haematological, Biochemical and Urine & Stool examinations) of 80 healthy volunteers in three season viz. Hemanta, Vasanta & Varsha.

All the literary, sub clinical & investigational materials have been critically analysed and evaluated.
Criteria for selection

- Healthy volunteer who is - Fit on the basis of Dashavidha-Atura-Pariksha, and not suffering from any major or minor illness.
- Able to perform selected procedures.
- One whose haematological as well as biochemical reports and General Observations were in normal range.
- Healthy volunteers who become victim of any disease between this study were excluded from the study.
The scoring pattern (from Ph.D. thesis of Paparinath et.al, 2007) was used with some modification according to the hypothesis, to assess the status of the *Bala*, in healthy volunteers.

<table>
<thead>
<tr>
<th>Numbers</th>
<th>Parameters</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prakrititah</td>
<td>06</td>
</tr>
<tr>
<td>2</td>
<td>Saratah</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>Samhananatah</td>
<td>09</td>
</tr>
<tr>
<td>4</td>
<td>Pramanatah</td>
<td>09</td>
</tr>
<tr>
<td>5</td>
<td>Satmyatah</td>
<td>09</td>
</tr>
<tr>
<td>6</td>
<td>Sattvatah</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Ahara-Shaktitah</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Vyayama-Shaktitah</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Vayatah</td>
<td>04</td>
</tr>
<tr>
<td>10</td>
<td>General Observation</td>
<td>07</td>
</tr>
<tr>
<td>11</td>
<td>Haematological Parameters</td>
<td>06</td>
</tr>
<tr>
<td>12</td>
<td>Biochemical Parameters</td>
<td>06</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Based on the score acquirement, healthy volunteers were fall in following three groups viz.:-

<table>
<thead>
<tr>
<th>Group</th>
<th>Pravara Bala</th>
<th>Madhya Bala</th>
<th>Avara Bala</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>&gt; 75%</td>
<td>50 -75 %</td>
<td>&lt; 50%</td>
</tr>
</tbody>
</table>

**Statistical analysis**

Paired‘t’ test and ANOVA (Analysis of Variances) were used for Statistical analysis.
In the present research work, total 95 volunteers were registered for the *Bala* assessment. Out of them 80 HV were continued till the end of study. So here, an attempt is being made to present the data of 80 healthy volunteers.
The maximum healthy volunteers were male (52.50%), 65% were 21 - 30 years age group, 58.75% were research scholars, 61.25% were Post-Graduates. 60% were having Niramisa-Ahara, 51.25% were having K. P. aggravating Rasa dominance, 70% were Guru and 80% Snigdha Guna Pradhana Ahara. 43.75% were of Tikshnagni, 46.25% were of Madhyama-Kostha. 87.50% were doing moderate type of work, while 80% were doing mental work. 37.50% were having sound sleep and 57.50% were having Tension.
General observation on *Dashvidha Pariksha*

<table>
<thead>
<tr>
<th>Varna</th>
<th>Saratah</th>
<th>Samhananatah</th>
<th>Pramanataha</th>
<th>Satmyatah</th>
<th>Satvatah</th>
<th>Ahara Shaktitaha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pravara Bala</td>
<td>8.75%</td>
<td>6.25%</td>
<td>6.25%</td>
<td>25%</td>
<td>0.00%</td>
<td>2.50%</td>
</tr>
<tr>
<td>Madhyama Bala</td>
<td>45.00%</td>
<td>68.75%</td>
<td>42.50%</td>
<td>50.00%</td>
<td>47.50%</td>
<td>32.50%</td>
</tr>
<tr>
<td>Avara Bala</td>
<td>55.00%</td>
<td>0.00%</td>
<td>25%</td>
<td>0.00%</td>
<td>2.50%</td>
<td>3.75%</td>
</tr>
</tbody>
</table>

Saratah, Samhananatah, Pramanataha, Satmyatah, Satvatah, Ahara Shaktitaha
27.50% healthy volunteers were having *Kapha-Paitika Prakriti*, 85.00% were of *Madhyama-Sarata*, 55.00% were of *Pravara-Samhanana*, 68.75% were of *Madhyama-Pramana*, 57.50% were of *Madhyama-Satmya*, 50.00% were of *Pravara-Sattva*, 72.50% were of *Madhyama Abhyavaharana Shakti*, 75.00% were of *Madhyama Jarana Shakti*. 
56.25% were having *Madhyama Vyayama-Shakti*, 36.25% were having *B.H.* (Breath Holding) 30 - 45 Sec., 28.75% were performed *P.E.F.R* (Peak Expiratory Flow Rate-Liter/Minute) ranges 410 - 500 L./m. The maximum healthy volunteers i.e. 72.50% were in *Madhyama Bala* group followed by 27.50% in *Pravara Bala* group while no one was in *Avara Bala* group.
The data shows effect of *Ritus* on *Dehabala* status was statistically highly significant decreased in comparison to *He.*-Vs., *Vs.*-Vr. and *He.*-Vr. *Ritus*.

This test also suggests that statistical difference between three Bala assessment profiles was observed *highly significant* and *significant* respectively concerning *Dehabala* and *Agnibala*. The data shown effect of *Ritus* on Parameters for Bala assessment, was statistically highly significant for *Deha* & *Agnibala* parameters, in comparison *He.*-Vs.-Vr. *Ritus*. 

*Statistical analysis*
Overall effect of Ritus on Bala

<table>
<thead>
<tr>
<th></th>
<th>Pravara Bala</th>
<th>Madhyama Bala</th>
<th>Avara Bala</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemanta</td>
<td>22</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Vasanta</td>
<td>0</td>
<td>71</td>
<td>6</td>
</tr>
<tr>
<td>Varsha</td>
<td>1</td>
<td>63</td>
<td>16</td>
</tr>
</tbody>
</table>
Overall when healthy volunteer's Bala have been assessed and evaluated - particularly Deha & Agnibala were found in decreasing pattern.
In Hemanta Ritu, there were 22 healthy volunteers in P.B. group, 58 in M.B. group while not even one was found in A.B. group.

In Vasanta Ritu, only 3 healthy volunteers were reported in P.B. group, 71 found in M.B. group and 6 were reached in A.B. group.

In Varsha Ritu, the number of healthy volunteers increased in A.B. group, in comparison to other Ritus, which is found supportive to the hypothesis.

It discloses that M.B. is found more affected in comparison to other Bala.
**Discussion**

- *Kala* affects every living as well as non-living thing of this universe.
- The term *'Bala'* is indicative of energy, strength, mighty, vigour, force, vitality of an individual. The concept of *Bala* is not only related with the whole body but also to the every tissue, even to the every cell of the body.
- The main theme of *‘TasyashitiyamAdhyayam’* is to make people aware concerning the methods to live accordance to environment.
This Sutra is the best example of the “Loka- Purusha-Samya-Siddhanta” according to which the changes occurring in the Loka affects the Purusha and vice versa.

Here Loka is the external environment in which a person is living. It is the source of food, medicine, air, water, heat, cold, humidity and all other means of sustenance of life. It is also the source of etiological factor. Therefore, it is important in the maintenance of health and in production of disease.
knowledge about the relationship between Kala and Bala is needed so that one can plan the activities viz. Trayopastambha, Vyayama etc. according to Kala.

The term Bala could not be compared only to strength or force etc.

Acharyas have described Bala in multiple aspects. Dhatusarata is the base of physical strength whereas Sattvasarata is the base of mental strength. Therefore, Ashta - Saras become the total strength of the human body, at physical as well as psychological level.
✓ Physiological level, *Agnibala* and *Doshabala* become the state of *Bala*.

✓ Observations and Survey study of the three *Ritus* suggest that values of scoring were in decreasing pattern during the *Hemanta Vasanta and Varsha Ritu* comparatively.

✓ This study clearly shows that, in *Hemanta Ritu Bala* is *Pravara*, in *Vasanta Ritu Bala* is *Madhyama* and in *Varsha Ritu Bala* is *Avara*. 
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Thank You