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EFFECT OF SEASONAL VARIATION ON SHARIRIK BALA (PHYSICAL STRENGTH): AND ANALYTICAL REVIEW WITH REFERENCE TO AYURVEDIC AND MODERN PERSPECTIVES

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ABSTRACT

Ayurveda emphasizes that health and disease are influenced not only by internal factors but also by external environmental changes, particularly *Ritu Parivartana* (seasonal variation). *Sharirika Bala*, the physical and immunological strength of an individual, fluctuates naturally with these seasonal transitions. The Ayurvedic concept of *Kalaja Bala* describes this cyclic alteration in strength, aligning closely with modern scientific understanding of circannual biological rhythms. To critically analyze the effect of seasonal variation on *Sharirika Bala* from both Ayurvedic and modern scientific perspectives and to explore the physiological and preventive implications of this relationship. This analytical review draws upon classical Ayurvedic texts (*Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya*), standard commentaries, and contemporary biomedical research available in indexed journals. Concepts such as *Ritucharya*, *Agni*, and *Ojas* were compared with modern findings related to immune modulation, metabolism, and gene expression across different seasons. Ayurvedic literature describes that *Bala* is highest during *Hemanta* and *Shishira Ritus*, moderate in *Vasanta* and *Sharad*, and lowest in *Grishma* and *Varsha* due to environmental influences on *Agni* and *Dosha* balance. Modern studies similarly reveal seasonal changes in immune gene expression, hormonal activity, and physical performance,

indicating enhanced immunity and metabolism during cooler months and reduced efficiency during warmer periods. These parallels demonstrate the physiological basis of *Kalaja Bala* and the preventive relevance of *Ritucharya*. Seasonal variation exerts a significant influence on *Sharirika Bala*, validating the Ayurvedic notion of time-dependent physiological adaptability. Integrating *Ritucharya* and *Rasayana Chikitsa* with modern preventive health approaches offers a holistic framework for maintaining optimal strength and immunity throughout the year.

KEYWORDS: *Sharirika Bala*, *Kalaja Bala*, *Ritucharya*, Seasonal Variation, *Vyadhikshamatva*, Ayurveda, Circannual Rhythm, Immunity.

INTRODUCTION

Ayurveda, the ancient Indian science of life, emphasizes the intimate relationship between humans and their environment. The external environment, particularly the changing seasons (*Ritu Parivartana*), exerts a profound influence on physiological processes and overall *Sharirika Bala* (physical strength) of an individual. *Bala* represents the composite strength, vitality, and resistance power (*Vyadhikshamatva*) that enable a person to maintain homeostasis and withstand disease challenges.[1]

According to *Charaka Samhita*, *Bala* is of three types *Sahaja* (congenital), *Kalaja* (time or season dependent), and *Yuktikruta* (acquired through diet, lifestyle, and therapy).[2] Among these, *Kalaja Bala* fluctuates naturally with age and seasonal transitions. It diminishes during certain periods due to climatic influences and metabolic alterations, especially during *Adana Kala* (Uttarayana) the northward movement of the sun, which causes increased dryness and depletion of body strength.[3,4] Conversely, during *Visarga Kala* (Dakshinayana), the predominance of coolness and unctuousness enhances *Bala* due to anabolic dominance and restoration of vitality.[5]

The classical texts of Ayurveda such as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* describe the six seasons (*Ritus*) *Shishira, Vasanta, Grishma, Varsha, Sharad,* and *Hemanta,* each characterized by specific environmental conditions, predominant tastes (*Rasa*), and Dosha variations.[6] These texts emphasize the importance of *Ritucharya* the seasonal regimen comprising dietary, behavioral, and therapeutic guidelines to maintain the equilibrium of *Doshas* and preserve *Bala* throughout the year.[7] For instance, *Vamana*

(emesis) is advised in *Vasanta Ritu* to expel aggravated *Kapha*, and *Virechana* (purgation) during *Sharad Ritu* to pacify *Pitta*.[8]

Ayurvedic physiology correlates *Bala* with multiple factors such as *Agni* (digestive power), *Aahara* (nutrition), *Prakriti* (constitution), and *Dhatusarata* (tissue excellence).[9] Properly balanced *Agni* contributes to optimal digestion and metabolism, producing well-nourished *Dhatus* that collectively enhance *Bala*.[10] Acharyas have also noted that strength varies with the time of year being highest in *Hemanta* and *Shishira*, moderate in *Vasanta* and *Sharad*, and lowest during *Grishma* and *Varsha*.[11]

Modern scientific research supports these Ayurvedic observations. Studies demonstrate that nearly one-quarter of human genes display seasonal variation in activity, influencing immune cell behavior and metabolism.[12] Moreover, environmental factors such as temperature, humidity, and daylight duration modulate hormonal balance, cardiovascular performance, and immune efficiency.[13] Physical strength, endurance, and immunity show circannual fluctuations parallel to those described in *Kalaja Bala*. These parallels highlight the scientific foundation of Ayurveda's emphasis on *Ritucharya* for maintaining physical resilience and preventing disease.

Hence, the present analytical review aims to explore the effect of seasonal variation on *Sharirika Bala* from both Ayurvedic and modern perspectives, correlating classical concepts such as *Kalaja Bala* and *Ritucharya* with contemporary insights into immune adaptation and physiological rhythms.

Review of Literature / Discussion

1. Concept of Bala in Ayurveda

The term *Bala* in Ayurveda represents the composite strength, vitality, and disease resistance of an individual. Acharya Charaka has stated that *Bala* is an indicator of the body's capacity to perform physical and mental activities efficiently.[14] It is considered a reflection of *Ojas* and *Kapha* in their balanced states, serving as the foundation for immunity (*Vyadhikshamatva*) and longevity.[15]

According to *Charaka Samhita*, *Bala* is of three kinds *Sahaja*, *Kalaja*, and *Yuktikruta*.[16] *Sahaja Bala* denotes congenital or genetic strength derived from the parental constitution,

Kalaja Bala represents seasonal and age-related variations, while *Yuktikruta Bala* is acquired through appropriate diet (*Ahara*), lifestyle (*Vihara*), and therapeutic measures (*Aushadha*).[17]

Among these, *Kalaja Bala* exhibits direct dependence on seasonal influences (*Ritu Parivartana*). Acharya Vagbhata explains that during *Uttarayana* (Adana Kala), dryness and heat dominate, leading to depletion of *Bala*; whereas during *Dakshinayana* (Visarga Kala), the environment becomes cool and nourishing, increasing *Bala* and promoting anabolic activity.[18,19]

2. Seasonal Variation and Sharirika Bala

Each *Ritu* has distinct environmental characteristics that influence the tridoshic balance (*Vata*, *Pitta*, *Kapha*) and consequently the individual's physical strength. *Charaka* and *Sushruta* describe the cyclic pattern of doshic predominance and remission across the six seasons.[20]

During *Shishira* and *Hemanta* (late autumn and winter), the cold environment causes constriction of body channels, promoting retention of heat and metabolic strength. Thus, *Bala* is at its peak during these seasons.[21] In *Vasanta* and *Sharad* (spring and autumn), moderate climatic conditions result in intermediate strength, while during *Grishma* (summer) and *Varsha* (monsoon), excessive heat and humidity cause *Bala Hani* (loss of strength) due to depletion of body fluids and digestive power.[22]

This cyclical change in strength aligns with the Ayurvedic concept of *Ritu Sandhi* the transition phase between two seasons. Acharya Vagbhata recommends gradual adaptation of food and lifestyle during these transitions to prevent imbalance and maintain *Bala*[23]. Neglecting *Ritucharya* during *Ritu Sandhi* can lead to *Dosha Prakopa* (aggravation) and reduced immunity.[24]

3. Factors Influencing Kalaja Bala

Acharyas have emphasized several determinants that modulate *Kalaja Bala*, including *Agni*, *Ahara*, *Vihara*, *Prakriti*, and *Vaya* (age). A well-functioning *Agni* ensures proper digestion and metabolism, leading to optimal nourishment of *Dhatus* (tissues) and maintenance of *Bala*.[25] In contrast, irregular food habits or seasonal incompatibility in diet (*Viruddhahara*) disturb *Agni*, resulting in *Daurbalya* (weakness).[26]

Regular practice of *Dinacharya* (daily regimen) and *Ritucharya* strengthens *Yuktikruta Bala* and compensates for seasonal loss of *Kalaja Bala*. *Abhyanga* (oil massage), *Vyayama* (exercise), and *Rasayana Chikitsa* (rejuvenative therapy) are repeatedly advised by the Acharyas to enhance *Sharirika Bala*.[27,28]

4. Modern Correlates of Seasonal Influence on Strength

Modern physiology validates the Ayurvedic description of *Kalaja Bala*. Studies have shown significant seasonal variations in immune response, metabolic rate, and endocrine activity in humans.[29] Dopico et al. (2015) demonstrated that approximately 23% of human genes exhibit seasonal expression patterns affecting inflammation, lipid metabolism, and immune cell function.[30]

During winter, heightened immune gene expression and increased basal metabolic rate are observed, paralleling the period of *Visarga Kala*, when *Bala* is highest.[31] Conversely, summer months correspond to *Adana Kala*, when dehydration and oxidative stress impair physiological endurance, akin to *Bala Hani* described in *Grishma Ritu*.[32]

Physical performance studies also reveal that aerobic capacity and muscular strength show seasonal fluctuations, with improved performance in cooler months due to better thermoregulation and nutrient assimilation.[33] These findings reinforce the Ayurvedic notion that environmental adaptation is essential to sustain optimal strength and immunity throughout the year.

5. Integrative Analysis

The Ayurvedic theory of *Kalaja Bala* can thus be understood as an early recognition of circannual biological rhythms. It emphasizes *homeostasis* between the individual and nature achieved through preventive and promotive regimens tailored to seasonal variation. Modern chronobiology and immunophysiology provide scientific support for these classical insights, confirming that the body's internal milieu is rhythmically tuned to external environmental changes.

Hence, maintaining *Ritucharya*, seasonal detoxification (*Shodhana*), and proper diet are not only traditional health practices but also scientifically grounded approaches to modulate immunity, metabolic balance, and physical strength.

DISCUSSION

The concept of *Sharirika Bala* in Ayurveda encompasses the overall physical endurance, vitality, and immunity of an individual. It represents the harmonious functioning of *Dosha, Dhatu, Agni,* and *Ojas*, maintaining both strength and resistance to disease.[34] Ayurveda recognizes that this *Bala* is not static but fluctuates naturally according to age, diet, and seasonal variations described as *Kalaja Bala*.[35]

Seasonal Dynamics of Bala

According to *Charaka Samhita*, *Bala* is of three types *Sahaja, Kalaja,* and *Yuktikruta*.[36] *Sahaja Bala* is innate, *Yuktikruta Bala* is acquired through proper diet and regimen, while *Kalaja Bala* depends on seasonal and temporal variations. Acharya Vagbhata describes that during *Adana Kala* (Uttarayana), the increasing intensity of sunlight and dryness of the atmosphere reduce body strength by depleting *Kapha* and moisture.[37] In contrast, during *Visarga Kala* (Dakshinayana), the environment becomes cool and unctuous, restoring strength and vitality.[38]

The six *Ritus* described in Ayurveda *Shishira, Vasanta, Grishma, Varsha, Sharad,* and *Hemanta* each influence *Sharirika Bala* differently. *Hemanta* and *Shishira* are characterized by high strength due to strong *Agni* and anabolic predominance, whereas *Grishma* and *Varsha* bring depletion due to heat and humidity.[39] This cyclical fluctuation is nature's rhythm, reflected physiologically as varying metabolic and immune efficiency.

Physiological Basis of Kalaja Bala

Agni and *Ojas* are two central determinants of *Bala* in Ayurvedic physiology. *Agni* governs digestion and metabolism; when balanced, it ensures adequate nourishment of *Dhatus* (tissues), which sustain *Bala*.[40] *Ojas* represents the essence of all *Dhatus* and functions as the physical substrate of immunity and vitality.[41] Seasonal disturbances in *Agni* or *Ojas* caused by improper food, excessive exposure, or neglect of *Ritucharya* manifest as *Bala Hani* (loss of strength).[42]

Modern Scientific Correlates

Modern research supports the Ayurvedic notion that environmental factors cause periodic physiological changes. Dopico et al. (2015) demonstrated that about 23% of human genes exhibit seasonal expression, influencing immunity, inflammation, and metabolism.[43] During cooler months, enhanced immune gene activity and higher metabolic rate correlate with the

Ayurvedic description of increased *Bala* in *Visarga Kala*.[44] Conversely, during warmer seasons, dehydration, oxidative stress, and hormonal fluctuations mirror the depletion described in *Adana Kala*.[45]

Seasonal variations are also seen in cardiovascular performance, muscular strength, and endurance. Studies indicate improved aerobic capacity and physical work output during moderate or cool temperatures, while heat exposure reduces performance due to electrolyte imbalance and reduced oxygen utilization.[46] Such findings scientifically substantiate Ayurveda's recognition of fluctuating *Sharirika Bala* through the year.

Ayurvedic Strategies for Maintaining Bala

Ayurveda prescribes *Ritucharya* the practice of adapting one's diet (*Ahara*), lifestyle (*Vihara*), and therapies (*Chikitsa*) according to the season as a preventive strategy to sustain *Bala*.[47] During *Vasanta Ritu*, *Vamana Karma* is advised to expel accumulated *Kapha*, and in *Sharad Ritu*, *Virechana* is recommended to pacify aggravated *Pitta*.[48] Regular *Abhyanga* (oil massage), *Vyayama* (exercise), and *Rasayana* therapy contribute to *Yuktikruta Bala*, compensating for natural declines in *Kalaja Bala*.[49]

Such seasonal purification and rejuvenation practices maintain homeostasis, strengthen immunity, and promote resilience. Modern physiology supports this approach, as timely detoxification and balanced nutrition positively modulate immune and metabolic functions.[50]

Integrative Interpretation

The Ayurvedic theory of *Kalaja Bala* aligns closely with modern concepts of chronobiology and environmental physiology. Both acknowledge that human strength, immunity, and metabolism are influenced by circannual biological rhythms. Ayurveda, however, offers a preventive and individualized system through *Ritucharya* and *Rasayana Chikitsa* that modern medicine increasingly recognizes under the umbrella of lifestyle and seasonal health management.[51]

Thus, the integration of Ayurvedic seasonal wisdom with contemporary biomedical insights provides a comprehensive framework for maintaining physical strength and immunity across varying climatic conditions.

CONCLUSION

The concept of *Sharirika Bala* in Ayurveda embodies a holistic understanding of human strength, vitality, and immunity, influenced by both internal and external factors. Among its classifications *Sahaja*, *Kalaja*, and *Yuktikruta Bala* the *Kalaja Bala* represents the cyclic variation of strength that occurs with seasonal transitions (*Ritu Parivartana*). Classical Ayurvedic texts such as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* provide detailed explanations of how climatic changes in *Adana Kala* (Uttarayana) and *Visarga Kala* (Dakshinayana) impact the body's homeostasis, metabolism, and resistance capacity.

In *Adana Kala*, the increasing heat and dryness of the environment lead to a natural decline in *Bala*, whereas in *Visarga Kala*, the abundance of coolness and moisture enhances strength and immunity. These seasonal fluctuations are balanced through *Ritucharya* the practice of seasonal adaptation in diet, lifestyle, and purification therapies (*Shodhana*) such as *Vamana* and *Virechana*. This framework demonstrates Ayurveda's anticipatory approach to preventive healthcare, ensuring that an individual remains physiologically resilient despite environmental changes.

Modern scientific studies parallel these ancient insights. Seasonal variations in gene expression, immune regulation, hormone secretion, and physical performance corroborate the Ayurvedic notion of *Kalaja Bala*. Evidence suggests that immune activity and metabolic efficiency are higher in cooler months and lower during warmer periods, aligning with the traditional view of strength fluctuations across *Ritus*. Thus, Ayurveda's principle of maintaining *Bala* through *Ritucharya* finds scientific validation in modern chronobiology and environmental physiology.

In conclusion, *Sharirika Bala* serves as a dynamic indicator of human adaptability and resistance. Understanding its seasonal modulation provides a strong foundation for integrating Ayurvedic seasonal regimens with contemporary health practices. This integrative approach emphasizing prevention, adaptation, and personalized care can play a pivotal role in maintaining optimal strength, immunity, and well-being throughout the year.

REFERENCES

1. Agnivesha, Charaka, Dridhabala. Charaka Samhita, Viman Sthana 8/94. Edited by Y.T. Acharya. Varanasi: Chaukhambha Sanskrit Sansthan; 2009.

2. Charaka Samhita, Sutra Sthana 11/36–37. Trans. Sharma P.V. Varanasi: Chaukhambha Orientalia; 2017.
3. Ashtanga Hridaya, Sutra Sthana 3/1–3. Trans. Srikantha Murthy K.R. Varanasi: Chaukhambha Krishnadas Academy; 2015.
4. Sushruta Samhita, Sutra Sthana 6/6. Trans. Sharma P.V. Varanasi: Chaukhambha Vishvabharati; 2016.
5. Ashtanga Hridaya, Sutra Sthana 3/4–6. Trans. Srikantha Murthy K.R. Varanasi: Chaukhambha Krishnadas Academy; 2015.
6. Charaka Samhita, Sutra Sthana 6/4–7. Trans. Sharma P.V. Varanasi: Chaukhambha Orientalia; 2017.
7. Bhagat S., Gupta V., Sodhi D. Effect of Changing Ritu (Seasons) on Sharira (Body). Int J Med Sci Clin Invention, 2016; 3(2): 1527–1530.
8. Ashtanga Hridaya, Sutra Sthana 3/18–49. Trans. Srikantha Murthy K.R. Varanasi: Chaukhambha Krishnadas Academy; 2015.
9. Jadhav S.S., Sonmankar K.R. An Ayurvedic Review of the Concept of Bala. Ayurlog: Natl J Res Ayurved Sci., 2024; 12(1): 1–8.
10. Charaka Samhita, Chikitsa Sthana 15/5. Varanasi: Chaukhambha Sanskrit Sansthan; 2020.
11. Ashtanga Hridaya, Sutra Sthana 3/5. Trans. Srikantha Murthy K.R.; 2015.
12. Dopico X.C. et al. Widespread seasonal gene expression reveals annual differences in human immunity and physiology. Nat Commun., 2015; 6: 7000.
13. Valiathan R., Ashman M., Asthana D. Effects of Ageing on the Immune System: Infants to Elderly. Scand J Immunol., 2016; 83(4): 255–266.
14. Charaka Samhita, Vimana Sthana 8/94. Ed. Acharya Y.T. Varanasi: Chaukhambha Sanskrit Sansthan; 2009.
15. Sushruta Samhita, Sutra Sthana 15/48. Trans. Sharma P.V. Varanasi: Chaukhambha Vishvabharati; 2016.
16. Charaka Samhita, Sutra Sthana 11/36–37. Varanasi: Chaukhambha Orientalia; 2017.
17. Jadhav S.S., Sonmankar K.R. An Ayurvedic Review of the Concept of Bala. Ayurlog: Natl J Res Ayurved Sci., 2024; 12(1): 1–8.
18. Ashtanga Hridaya, Sutra Sthana 3/1–6. Trans. Srikantha Murthy K.R. Varanasi: Chaukhambha Krishnadas Academy; 2015.
19. Charaka Samhita, Sutra Sthana 6/4–6. Trans. Sharma P.V., 2017.
20. Sushruta Samhita, Sutra Sthana 6/6. Varanasi: Chaukhambha Vishvabharati; 2016.

21. Bhagat S., Gupta V., Sodhi D. Effect of Changing Ritu (Seasons) on Sharira (Body). Int J Med Sci Clin Invention., 2016; 3(2): 1527–1530.
22. Ashtanga Hridaya, Sutra Sthana 3/5–6. Srikantha Murthy K.R.; 2015.
23. Ashtanga Hridaya, Sutra Sthana 3/58–59. Srikantha Murthy K.R.; 2015.
24. Charaka Samhita, Viman Sthana 8/123. Varanasi: Chaukhambha Orientalia; 2017.
25. Charaka Samhita, Chikitsa Sthana 15/5. Varanasi: Chaukhambha Sanskrit Sansthan; 2020.
26. Sushruta Samhita, Sutra Sthana 46/3. Varanasi: Chaukhambha Vishvabharati; 2016.
27. Charaka Samhita, Sharira Sthana 6/12–13. Varanasi: Chaukhambha Orientalia; 2017.
28. Davison G., Kehaya C., Wyn Jones A. Nutritional and Physical Activity Interventions to Improve Immunity. Am J Lifestyle Med., 2014; 10(3): 152–169.
29. Dopico X.C. et al. Widespread seasonal gene expression reveals annual differences in human immunity and physiology. Nat Commun., 2015; 6: 7000.
30. Valiathan R., Ashman M., Asthana D. Effects of Ageing on the Immune System: Infants to Elderly. Scand J Immunol., 2016; 83(4): 255–266.
31. Tucker P., Gilland J. The Effect of Season and Weather on Physical Activity: A Systematic Review. Public Health., 2007; 121(12): 909–922.
32. Holkar V.N., Kale D.R. Concept of Bala: An Ayurvedic and Modern Review. Ayurline: Int J Res Indian Med., 2022; 6(1).
33. Shephard R.J., Aoyagi Y. Seasonal variations in physical activity and implications for human health. Eur J Appl Physiol., 2009; 107(3): 251–271.
34. Charaka Samhita, Vimana Sthana 8/94. Ed. Acharya Y.T. Varanasi: Chaukhambha Sanskrit Sansthan; 2009.
35. Sushruta Samhita, Sutra Sthana 15/48. Trans. Sharma P.V. Varanasi: Chaukhambha Vishvabharati; 2016.
36. Charaka Samhita, Sutra Sthana 11/36–37. Varanasi: Chaukhambha Orientalia; 2017.
37. Ashtanga Hridaya, Sutra Sthana 3/1–3. Trans. Srikantha Murthy K.R. Varanasi: Chaukhambha Krishnadas Academy; 2015.
38. Ashtanga Hridaya, Sutra Sthana 3/4–6. Ibid.
39. Bhagat S., Gupta V., Sodhi D. Effect of Changing Ritu (Seasons) on Sharira (Body). Int J Med Sci Clin Invention. 2016;3(2):1527–1530.
40. Charaka Samhita, Chikitsa Sthana 15/5. Varanasi: Chaukhambha Sanskrit Sansthan; 2020.
41. Charaka Samhita, Sharira Sthana 6/12–13. Varanasi: Chaukhambha Orientalia; 2017.

42. Sushruta Samhita, Sutra Sthana 46/3. Ibid.
43. Dopico X.C. et al. Widespread seasonal gene expression reveals annual differences in human immunity and physiology. Nat Commun., 2015; 6: 7000.
44. Valiathan R., Ashman M., Asthana D. Effects of Ageing on the Immune System: Infants to Elderly. Scand J Immunol., 2016; 83(4): 255–266.
45. Tucker P., Gilland J. The Effect of Season and Weather on Physical Activity: A Systematic Review. Public Health., 2007; 121(12): 909–922.
46. Shephard R.J., Aoyagi Y. Seasonal variations in physical activity and implications for human health. Eur J Appl Physiol., 2009; 107(3): 251–271.
47. Charaka Samhita, Vimana Sthana 8/123. Varanasi: Chaukhambha Orientalia; 2017.
48. Ashtanga Hridaya, Sutra Sthana 3/18–49. Srikantha Murthy K.R. 2015.
49. Davison G., Kehaya C., Wyn Jones A. Nutritional and physical activity interventions to improve immunity. Am J Lifestyle Med., 2014; 10(3): 152–169.
50. Holkar V.N., Kale D.R. Concept of Bala: An Ayurvedic and Modern Review. Ayurline: Int J Res Indian Med., 2022; 6(1).
51. Jadhav S.S., Sonmankar K.R. An Ayurvedic Review of the Concept of Bala. Ayurlog: Natl J Res Ayurved Sci., 2024; 12(1): 1–8.