

A Rule-Based System for Personalized Yoga Therapy Management

Yoga, a timeless holistic discipline rooted in ancient Indian philosophy, has emerged as a global phenomenon for enhancing human well-being. Originally designed as a path toward self-realization, yoga today is widely embraced for its therapeutic potential in improving both physical and mental health. Despite the growing evidence supporting its benefits, especially in clinical settings, its adoption remains hindered by challenges, including the lack of a structured yet personalized practice framework. Personalized yoga practices often lead to subjective practice selection and variability among experts.

This project presents a rule-based decision support system designed to generate personalized and evidence-informed yoga therapy modules for individuals with one or multiple health conditions. The system integrates disease-specific yoga modules curated through empirical evidence, including randomized controlled trials (RCTs) and expert-validated content validity ratio (CVR) scores, along with documented contraindications.

The system operates through a dual-panel architectureⁱ: an admin panel for structured data management and a user panel for therapeutic personalization. The admin panel stores disease-wise yoga modules, wherein each practice is mapped to predefined therapeutic categories (including preparatory practices, yogāsana, prāṇāyāma, meditation, lifestyle modifications, and yogic diet) as well as categories designated under the Panchakosha framework (Annamaya, Pranamaya, Manomaya, Vijnanamaya, and Anandamaya). Each practice is embedded with evidence parameters such as the number of supporting RCTs and CVR scores, along with disease-specific contraindication data.

The user panel, intended for yoga consultants, enables users to select a primary disease as well as multiple comorbid conditions, arranged according to clinical severity. Users allocate weighted priority scores (total = 100) reflecting disease severity. Based on these inputs, the system systematically computes category-wise practice distribution. Practices are ranked using a hierarchical priority algorithm based on (i) number of positive RCTs, (ii) repetition across selected disease modules, and (iii) CVR scores.

The system also performs automated contraindication filtering, removing any practice contraindicated for even a single selected condition. Fractional allocations arising from weighted computations are resolved using a severity-priority rule, ensuring clinically dominant conditions receive precedence. The final output is presented in an Integrated Yoga Therapy (IAYT) format, structured kosha-wise, thereby translating computational results into a therapeutically coherent clinical module.

This system introduces a novel technical method for evidence-based yoga therapy personalization while simultaneously standardizingⁱⁱ the clinical decision-making process, enabling safe, transparent, and reproducible yoga therapy prescriptions for multimorbidity management.

ⁱ The term “dual-panel architecture” refers to logically separated functional roles—administrative data management and user-level therapeutic personalisation—implemented within a single web-based system interface in the current version. These panels are role-segregated and may be deployed as separate interfaces or modules in future implementations without altering the underlying decision framework.

ⁱⁱ Standardizing refers to the decision-making process and rule-based framework for therapy prescription, and not to the standardization of yoga practices or philosophical doctrines.