

CHAPTER I

INTRODUCTION

“In my judgment, physical fitness is basic to all forms of excellence and to a strong, confident nation.” - Robert Kennedy

Physical fitness is an important but a hitherto overlooked aspect of today's fast paced, competitive human existence. The rising trend in lifestyle diseases has however led to rising awareness that being in good physical condition has implications not just on overall health, longevity, and immunity levels, but also on income earning ability, and general quality of life. This awareness and consequent indulgence in some form of formal fitness activity largely increases with economic affluence. Conversely, as we go lower down the economic strata, instances of formal fitness activity also seem to decline due to lower disposable income/time availability, lack of access to facilities/knowledgeable trainers etc.

As of 2018, more than half of India's population has low/moderate disposable income, earning under \$5/day (Rs.350/day). Within this segment, those living in urban areas are relatively further disadvantaged compared to the rural part of this segment. This is especially true in terms of health and fitness levels, mainly due to availability of open spaces, nature of work activity, access to clean water, air etc. As a result of these factors, the rural poor are better placed in terms of physical fitness, compared to the urban poor.

In today's urban India, owing to high cost of housing/real estate, the urban poor primarily reside in areas known as slums. It refers to physically poor quality, socio-economically sub-standard housing which poses a danger of health and life to the slum dwellers. An area of degenerated living, it denotes “an abode of half starved, a place of poverty, wretchedness and vice, the house of racketeers and criminals” and so on. In this backdrop, availability and knowledge of fitness routines can help improve health, immunity of slum dwellers besides providing them avenues for sports-based job. It is therefore of particular interest to examine the impact of physical activities on selected motor fitness, health related fitness and physiological variables of slum adolescents.

1.1 SLUMS SCENARIO IN INDIA

The word “slum” is often used to describe informal settlements within cities that have inadequate housing and miserable living conditions. They are often overcrowded, with many people crammed into very small living spaces. Slums are not a new phenomenon. They have been a part of the history of almost all cities, particularly during the phase of urbanization and industrialization. Slums are generally the only type of settlement affordable and accessible to the poor in cities, where competition for land and profits is intense. The main reason for slum proliferation is rapid and non-inclusive patterns of Urbanization catalyzed by increasing rural migration to urban areas.

As per the latest statistics made available by Ministry of Housing and Urban Poverty Alleviation on Slums in India, that the urban population of the country stood at 38 crores or 31.2 per cent of the total population. The number of cities and towns increased from 5,161 in 2001 to 7,936 in 2011. The number of million plus cities has grown from 35 in 2001 to 53 in 2011, accounting for 43% of India’s urban population. Report of the High Power Expert Committee (2011) estimated that by 2031, India will have more than 87 metropolitan areas and the country’s urban population is likely to soar to over 60 crores, adding about 22.5 crores population to present urban population. This pace and scale of urbanization is unprecedented for India and will be the fastest in the world outside

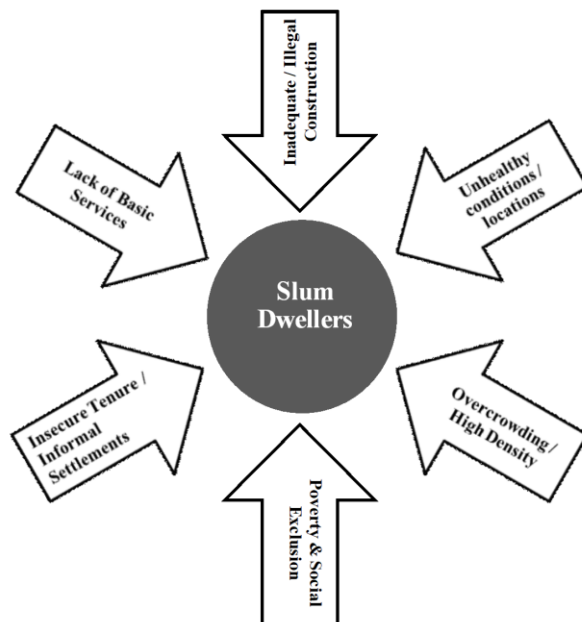
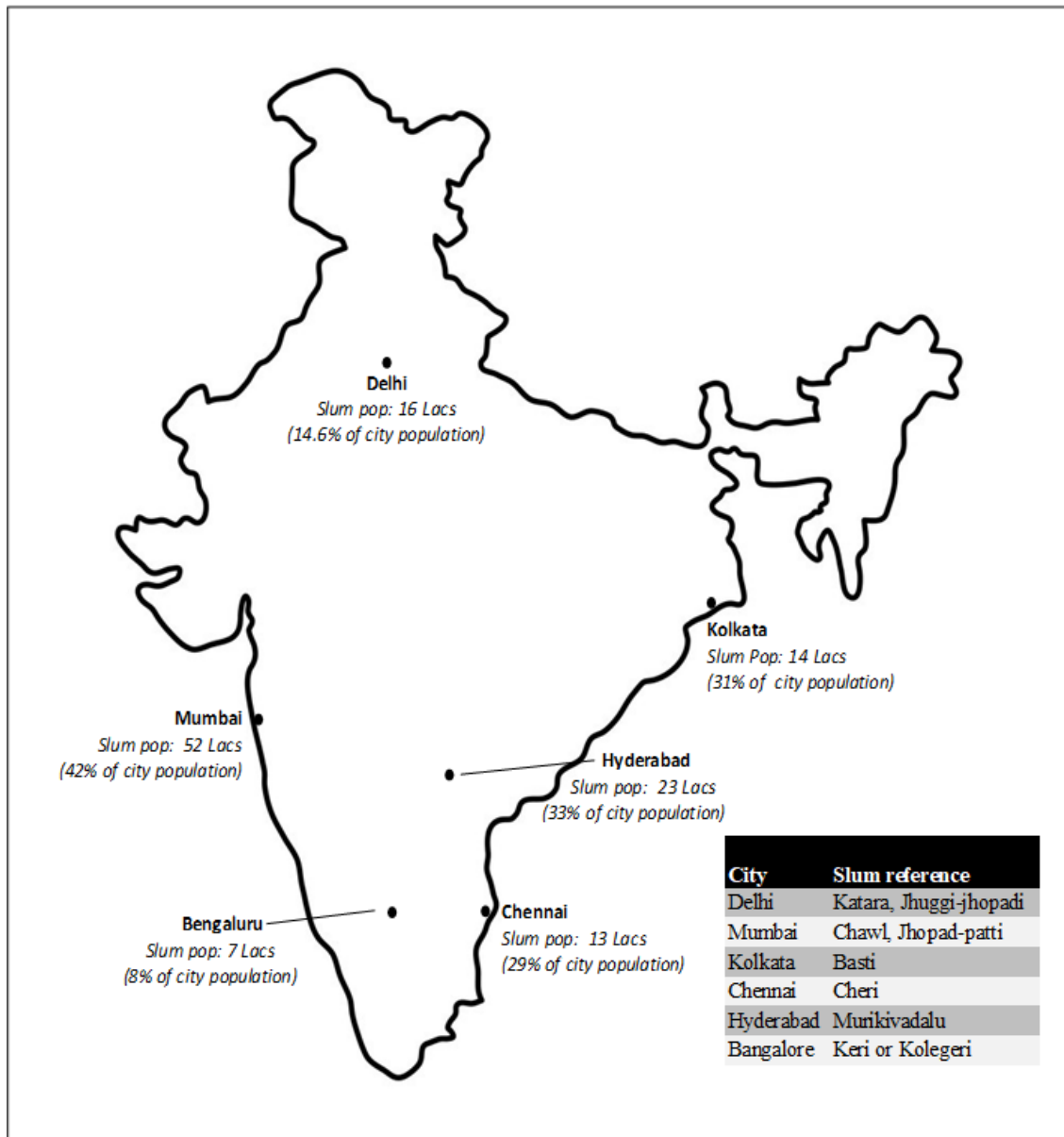


Figure 1: Challenges faced by Slum Dwellers

of China. The population growth of urban India is mainly organic, together with reclassification of rural areas and expansion of city boundaries.

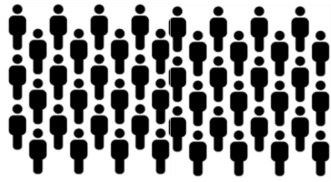
According to the High Powered Expert Committee 2011, direct migration to urban areas accounts for 20 to 25 percent of the increase in urban population. India’s urbanization, however, is lower as compared to other large developing countries such as China (45%), Indonesia (44%) & Brazil (87%).

Figure 2: Slum Population in Major Metros



As far as India is concerned, it faces several challenges due to rapid urbanization. The total urban housing shortage estimated at the beginning of the 12th Plan period i.e. 2012 was 1.9 crores. In so far as the urban transport is concerned, Ministry of Urban Development study in 2010 based on 87 cities estimated that in about 20 years' time, the expected journey speed of major corridors in many cities would fall from 26-17 kmph to 8-6 kmph.

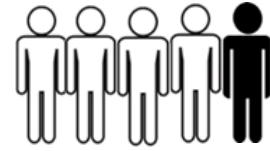
Figure 3: Facets of Slum Life in India



6.5 crore people



1.4 crore households



1 in 5 Urban inhabitants



Though only 5% of population,
Contribute 7% to India's GDP



1 in 4 did
not have phone



9 out of 10 did
not have computer



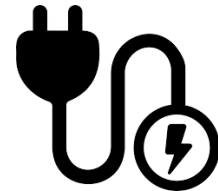
1 in 3 did not
have TV



1 in 5 did not live in a permanent structure



2 in 5 did not have
Drinking Water
in-premises



1 in 10 did not
have Electricity



1 in 3 lived in rented houses



1 in 3 did not have
in-premises Toilet



1 in 3 did not have
any proper bathroom



2 in 3 did not have
closed drainage

The air quality has also deteriorated sharply carrying with it concomitant health costs. The per capita emission levels in India's seven largest cities have been estimated to be at least three times higher than WHO standards.

These general challenges to urbanisation will further accentuate the challenges historically faced by slum dwellers. Slums manifest deprivation that transcends income poverty. They are characterized by acute over-crowding, insanitary, unhealthy and dehumanizing living conditions. They are subject to insecure land tenure, lack of access to basic minimum civic services such as safe drinking water, sanitation, storm drainage, solid waste management, internal and approach roads, street lighting, education and health care, and poor quality of shelter. Many of these habitations are located in environmentally fragile and dangerous zones prone to disasters like landslides and floods, that make the poor residents highly vulnerable. A significant proportion of the slum dwellers also face social burdens and health problems worse than their non-slum and rural counterparts. Civic bodies do not provide the required municipal services in slums on the plea that these are located on 'illegal' space. Moreover, the scale of the problem is so colossal that it is beyond the means of Municipalities which lack a buoyant fiscal base.

1.1.1 Policy Perspective

India is witness to an unprecedented pace and scale of urbanisation. The delivery of urban infrastructure and basic services is insufficient to provide citizens with a decent quality of life. Urban India is underserved by utilities, suffers from inadequate housing stock, and is highly congested and polluted. As discussed earlier, addition of over 22.5 crores population to urban India by 2031 will put enormous stress on the urban system if not managed well.

The major programmes started by the Government of India towards inclusive city development with focus on slums, including the provision of basic services and affordable housing to the urban poor, were the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) – Basic Services to the Urban Poor (BSUP) & Integrated Housing & Slum Development Programme (IHSDP) and the 2 schemes entitled Interest Subsidy Scheme for Housing the Urban Poor (ISHUP) and Affordable Housing in Partnership.

The Government also launched a new scheme Pradhan Mantri Awas Yojana - “Housing for All (Urban)” Mission, to be implemented during 2015-2022. This Mission will provide central assistance to implementing agencies through States and UTs for providing houses to all eligible families/beneficiaries by 2022. The Mission seeks to address the housing requirement of urban poor including slum dwellers through following programme verticals:

- ❖ Slum rehabilitation of Slum Dwellers with participation of private developers using land as a resource
- ❖ Promotion of Affordable Housing for weaker section through credit linked subsidy
- ❖ Affordable Housing in Partnership with Public & Private Sectors
- ❖ Subsidy for beneficiary-led individual house construction/enhancement.

This will cover all statutory towns as per the last Census and towns notified subsequently. It will support construction of houses upto 30 sq.m carpet area with basic civic infrastructure.

“In-situ” slum rehabilitation using land as a resource with private participation for providing houses to eligible slum dwellers is an important component of the “Pradhan Mantri Awas Yojana – Housing for All (Urban)” mission. This approach aims to leverage the locked potential of land under slums to provide houses to the eligible slum dwellers bringing them into the formal urban settlement.

The Guidelines provides that, Central Government land owning agencies should also undertake “in-situ” slum redevelopment on their lands occupied by slums by using it as a resource for providing houses to slum dwellers. In case of relocation, a land should either be provided by the agency itself or the agency may collaborate with the States/UTs for obtaining land from State/UT/City. Central Government agencies should not charge land costs for the land used for the purpose of housing the eligible slum dwellers.

Central Govt. agencies undertaking slum development in partnership with private developers would be eligible for slum rehabilitation grant of Rs. 1 lakh per house on an average for all slums on their land being taken up for redevelopment with private partners.

1.1.2 Slums in Tamil Nadu

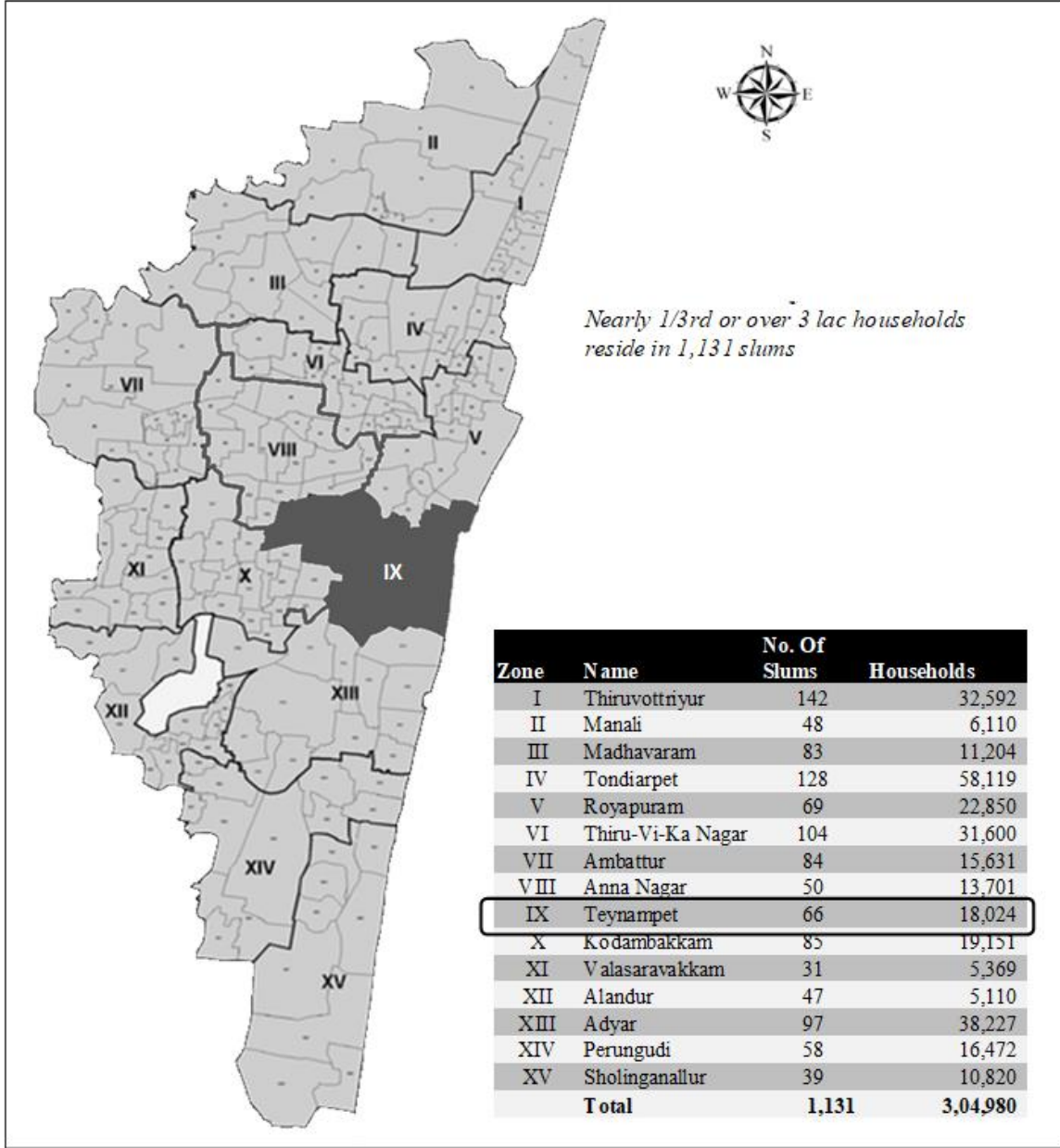
As per the latest statistics from the Ministry of Housing and Urban Poverty Alleviation on Slums in India, Tamil Nadu ranks first in terms of share of urban population among the larger states in the country and third in absolute urban population. Tamil Nadu tops the list of urbanized states with 48% of its population living in urban areas, which is significantly higher than national average of 31%. It had 58 lac slum inhabitants, which was about 9% of total slum population of India. More people in Tamil Nadu have moved from rural to urban areas in the last ten years compared to other States, according to the 2011 Census data. Evenly spread small, medium and major towns, migration of people from rural areas in search of employment and the presence of industrial and trading centres in all districts contributed to the speedy and broad based urbanization of Tamil Nadu. The projected percentage of urban population in Tamil Nadu by the year 2030 has been estimated as 67%, which will continue to be the highest in the country among large States.

The Tamil Nadu Slum Clearance Board (TNSCB) is the state's agency to implement various Housing, Slum Development and Rehabilitation and Resettlement programmes to ameliorate the living conditions of the slum families in Tamil Nadu. The Board has been implementing various programmes like In-situ tenemental schemes, In-situ plotted and infrastructure development and Rehabilitation and Resettlement schemes to improve the environs of the slums and the living standards of the urban slum families to achieve the Slum Free Cities Vision before 2023.

1.1.3 Slums in Chennai

The TNSCB conducted a socio-economic survey of 1,131 slums in Chennai, a few years ago. The survey reported a 52% increase in slums in the city from 2001 to 2014 and about 21% (235 slums) were untenable (located in unhealthy and environmentally unsafe areas) and requiring relocation. It concluded that at least Rs 32,370 crore will be required to upgrade/ relocate the 1.77 lakh households in the 1,131 slums surveyed.

Figure 4: Chennai City – Zone wise



TNSCB’s study also found that 51% of the population in slums belong to downtrodden SC/ST communities and most of them are casual labourers (73%). Nevertheless, overall literacy rate is quite high at 88% among Chennai’s slum population compared to 84% national average

1.2 ROLE OF SPORTS AND FITNESS IN CHENNAI SLUMS

Chennai's slum dwellers are largely domestic workers, day labourers, sweepers and sewage workers, and in southern parts near the IT corridor, include housekeeping/ security staff etc. They leave early for work, and return late. A few are history sheeters and resort to petty crimes. Smoking, alcoholism and domestic abuse are common, while drugs menace is on the rise.

Consequently, aggression, frustration and helplessness affect children. The adolescents, especially the boys, are tough, spunky and mostly, directionless. According to results of a research study taken up by Information and Resource Centre for the Deprived Urban Communities (IRCDUC) in some Chennai slums, 35% of children in the age group of 15-18 were school dropouts and 67% were boys. Since most families are debt-ridden, the parents see them as potential income earners, thereby paving the way for a few to end up as goons for politicians and financiers. Further, Chennai Slums exist alongside affluent communities and the stark disparity in incomes/quality of life tends to breed angst and lack of self esteem. The need to prove oneself or to bridge the divide can also manifest in recourse to crime.

To some extent, participation in sports seems to help youngsters overcome their challenges, in breeding self-confidence and in helping them establish a respectable livelihood. Football, street cricket, boxing, body building, carrom have a strong following among slum youth and provide much needed direction and motivation. For instance, serious participation in football takes up most of their energy and time (sometimes players practise up to six hours a day), giving them little leeway to go astray. As part of the football programme, they undergo team building activities and counselling on the importance of discipline, hygiene and respect. Eventually, changes appear in the way these youth carry themselves, in the language they use and helps them stay out of unnecessary activities.

Therefore, in these parts, sports is a ticket to a better life — it provides focus to complete their schooling, admission to colleges, entry to government jobs and a chance to stand equal among their more advantaged counterparts. This is evident by the rousing participation in 'Inter Slum Olympics' conducted by the TNSCB in some sites. Furthermore, thanks to the efforts of various good Samaritans and NGOs to popularise

sports in slums, some of the youth who took up games have gone on to perform in international events.

Nevertheless, various reasons such as domestic compulsions, lack of avenues, or just lack of interest/motivation or discipline are hurdles to participation in sports. This is where knowledge of general fitness routines would help them because benefits are evident in short term, and these don't require lot of space or equipments or time. They can be practiced across age groups and help them cope with the stress of day to day life. Further, physical fitness help them overcome immunity issues due to poor quality or non-nutritious home food, frequenting of unhygienic roadside eateries, threat of waterborne diseases, and sub-par living conditions due to presence of garbage, absence of sewers & open defecation.

Accordingly, for this study, the fitness routines chosen – namely Calisthenics, Aerobic Dance, and Recreation Games – can be performed by everyone in any physical condition, across age groups, at any time or place (majority of the workouts do not have space constraints). Regularly performing these fitness routines will help maintain the pillars of physical fitness – strength, agility, balance, flexibility and endurance – all through their life.

1.2.1 Calisthenics Exercise

Calisthenics has its origins in ancient Greece; “kallos” means beauty and “thenos” means strength. It's a set of exercises which helps to build one's flexibility and strength using only body weight for resistance vide specialized movements such as push-ups, sit-ups, squats, and chin-ups (i.e. without the use of equipment).

Callisthenics cover a great number of exercise routines offering great variety and almost infinite scope for modification. They are quite versatile in the sense, they can be performed alone by oneself or in groups, and can be adapted to varying fitness levels – be it a developing child, a strong youth or even sedentary /older people. Besides strength and endurance, Calisthenics can also improve endurance, coordination and general physical fitness by exerting the cardiovascular system. (Encyclopedia Britannica)

The first record of calisthenics training is by Herodotus, a Greek historian who observed how the Spartans armies "danced". He assumed it was a tribal dance, when it

reality it was a calisthenics workout. This kind of training persisted for centuries throughout Greece, the Roman Empire, Gaul, India, other parts of Asia among other places. The famous Shaolin monks trained in a manner that can be considered calisthenics. They turned to this form of exercise to prepare to defend their temples from foreign invaders. Roman armies and gladiators would often train using calisthenics; in fact, most major armies have used some variant of calisthenics training to prepare for battle across history. It is only from the second half of the twentieth century that weight training using barbells, dumbbells and machines almost totally replaced bodyweight calisthenics as the preferred method of strength training. (J. A. Blumenthal, 1989).

Across India, students at most private schools perform different levels of calisthenics – from basics such as free-hand exercises, 8-count series, 16-count series, to more specialized movements such as pushups, sit-ups, chin-ups, lunges etc. It is the latter routines that boost performance in sports activities. However, in case of most government schools where slums students study, even the basic callisthenic routines are rarely taught. Therefore teaching these children to perform the specialized movements can make a big difference to their physical fitness and ability to outperform in sports.

Benefits of Calisthenics Exercise

- ❖ Improves stamina, strength, agility, coordination, balance, and promotes overall fitness
- ❖ Can address psychological well-being by boosting self-confidence, minimizing stress, overcoming depression etc
- ❖ Some select calisthenics exercises can greatly boost performance for sports persons
- ❖ Calisthenics routines can be appropriately selected to have a complete full-body workout
- ❖ Also, due to great variety of routines available, calisthenics can be done by people in all age groups and genders, in any fitness condition
- ❖ Calisthenics workout can be done indoor and outdoor, and most routines do not have space constraints or apparatus/aid requirements.
- ❖ Routines can be selected based on one's time availability and can be done in as low as 10-15 minutes also

1.2.2 Recreation Games

Recreation education is aimed at teaching people to utilize their free time and leisure time in a constructive manner. To achieve this aim and to have value as recreation, activities must be suited to one's physical, mental, emotional and social needs. In other words, it implies a careful selection of activities for the utility of free time in a healthy way (*Ajmer Singh, 2004*).

Games are a universal form of recreation generally including any activity engaged in for diversion or amusement and often establishing a situation that involves a contest or rivalry. (*Encyclopedia Britannica*)

Simply put Recreation Games refer to a wide variety of games for people of all ages to improve their physical condition, and to overcome their stress, depression, low self esteem and other similar psychological challenges. They include

- ❖ Traditional Indian games such as Bambaram (Spinning the top), Pallankuzhi, Gilli Danda, Nondi (Hopscotch), Satoliya/Pithoo/Lagori (Seven Stones), Kancha/Goli (Marbles)
- ❖ Minor Games for children such as Ordinary Tag, Crowns and Cranes, Couple Relay, Dodge ball, Three deep etc
- ❖ Outdoor games for older children/adults like street cricket, fives football, Frisbee etc where regular rules are adjusted to accommodate available space and number of participants.
- ❖ Games at Corporate Events/Get-togethers like Musical Chairs, Human Knot, Perfect Square etc

Right from the days of early man, games have been played as a leisure pastime with available tools, implements and according to the physical/mental abilities and the socio-cultural ethos of that time. It may be fair to say that all major sports played today would find their origin from some unstructured recreational game indulged in by our ancestors in the past.

Similar to calisthenics exercises, recreational games can be adapted for any age group, fitness levels, or gender. However, unlike calisthenics, most recreational games

require varying levels of space, more participants (cannot be performed alone), and in some cases some equipment (for example, a bat and ball in case of Street Cricket).

Nevertheless, the biggest attraction of Recreational Games is its low entry barriers. Fitness activities such as Weight Training, or Sports need specific gear or knowledge/guidance. Even practitioners of Calisthenics need some knowledge and motivation to perform some challenging routines. In contrast, Recreation Games have that 'fun' element which encourages participation and draws people to it. Thereby, without consciously being aware of the physical exertion, participants find themselves enjoying a full body workout and emerge mentally refreshed. This is precisely the reason why recreational games are included even in formal Corporate gatherings as an ice-breaker and to relax everyone, and why during the PT period school children eagerly prefer recreational games.

Due to these advantages, introducing recreational games among Slum children will help them gradually build their stamina and overall fitness levels without conscious effort. The impact of fraternizing during participation will greatly help address their feelings of low self esteem, frustration, deprivation and develop soft skills such as leadership, organizing ability, making friends etc.

Benefits of Recreation Game

- ❖ Improves stamina, agility, coordination, balance, and flexibility
- ❖ Due to the fun element, Recreational Games are among the most pleasant paths to fitness. Even people with low motivation levels can benefit
- ❖ Also supports mental health; can greatly lower stress levels and address any psychological challenges such as low self confidence, frustration etc.
- ❖ Due to great variety of games, participants can be from any age groups and genders, in any fitness condition.
- ❖ Due to the group nature of these games, it develops social skills such as leadership, organizing ability, fraternizing.

1.2.3 Aerobic Dance

Aerobics Dance is essentially a series of dance-like movements performed to a rhythm which helps to improve flexibility, balance, co-ordination and cardio-vascular fitness (and in some cases muscular strength). The rhythmic movements are usually performed in groups to music, although it can be done otherwise as well. Common moves include Basic Step, Corner knee (or corner kick), T-Step, Over-the-Top, V-Step, Straddle Down etc.

The term 'Aerobics' was first coined by Dr Kenneth H. Cooper, and Col. Pauline Potts; the former was a physical therapist while the latter was an exercise physiologist. They researched the dichotomy between muscular strength and inability to perform in endurance activities such as long distance running or swimming. After years of research, he published his findings in 1968 in a book called 'Aerobics', which included exercise programs using running, walking, swimming and bicycling. This was followed up by a more user friendly book called "The New Aerobics" in 1979. Though Dr.Cooper is called the 'father of Aerobics', his concepts and exercise routines gained worldwide popularity after the release of actress Jane Fonda's exercise videos in 1982.

Today, many gyms and schools offer a variety of aerobic dance classes which are taught by a certified instructor. A typical aerobics dance session can be broken up into: warm-up, cardio, muscular endurance, cool-down. Across the world, Aerobics Dance as an exercise is popular among the affluent classes. Moreover, women have higher preference for this as it helps them attain their preferred body shape, though classes see participation by men as well. Being one of the most injury free workouts, Aerobics Dance is also extremely versatile and can be tailored in intensity and complexity for all age groups and for people at all fitness levels.

Children generally have a natural affinity to dance. Further, the culture of people living in slums inculcates dance regularly, be it weddings, funerals or any other festival or event. Therefore, an exercise which involves music and dance steps will be more readily adopted by slum children. In fact, across India most private schools incorporate Aerobic Dance in their PET curriculum. But, this concept is alien to schools run by the State government. Given an opportunity, slum children are likely to take up Aerobic Dance with

a lot of enthusiasm and ease. This will aid their overall physical health and specifically, their cardio-respiratory endurance. Those slum children who are already pursuing sports can improve their performance by practicing this. Aerobic Dance is also a great mood elevator, and the combination of music and dance steps can relieve stress and any negative feelings. Moreover, given the high level of interest in Aerobic Dance in metros, slum youth may also consider this as a career opportunity to become an instructor in future.






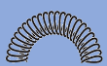




































Benefits of Aerobic Dance

- ❖ Improves stamina, agility, coordination, balance, and flexibility. Sustained practice will boost cardio-respiratory endurance
- ❖ Helps in toning the muscles and achieving a preferred body shape (especially for women)
- ❖ The combination of music and dance, endless variety in routines makes it among the most interesting workouts
- ❖ Can be modified to suit all age groups and people in all fitness levels.
- ❖ Can be a great mood elevator. Helps minimize stress, and low self confidence
- ❖ Can be performed in groups or solo; space is not a constraint
- ❖ Can be personalized to suit one's music taste, choice of steps etc.

1.3 HEALTH AND FITNESS AS MEASURABLE OUTCOMES

The exercises discussed in the previous section (Calisthenics, Recreational Games, Aerobic Dance) can be tailored or adapted to provide a 360 degree or full body workout. Regularly performing such a workout will yield positive results that can be felt in all aspects of day to day life by the slum children. Further, physical fitness being a science, the impact can be measured in unambiguous, specific terms to establish that the positive results are not just a placebo effect. The improvement in physical fitness levels can be measured under three heads as seen in Table below:

Table I Overview of Dependent variables considered for this study

	Motor Fitness Ability of the neuromuscular system to perform specific tasks				Health-related Fitness Perform moderate to vigorous physical activity without much fatigue				Physiological Fitness Healthy condition of vital organs of the body			
	 Speed	 Agility	 Co-ordination	 Balance	 Cardio-Respiratory Endurance	 Flexibility	 Muscular Strength	 Body Composition	 Resting Pulse Rate	 Vital Capacity	 Respiration Rate	 Breath Holding Time
What	Move from one place to another in the shortest possible time	Co-ordinate movements & synchronize them as per changing conditions	Quickly and purposefully perform difficult spatio-temporal movement structures	Maintain line of gravity of a body within the base of support with minimal postural sway	Lungs & heart delivers enough oxygen to cells to endure prolonged activity	Free movement around any joint in an unrestricted manner sans discomfort	Muscle group develops max contractile force against resistance in one contraction	Share of fatty tissues, muscles and bones in the anatomy	Number of beats felt exactly for one minute	Max volume of air forcefully expelled from the lungs after a maximal inspiration	Number of breaths taken for exactly one minute while at rest	Time for which breath can be withheld after breathing in intensely
Example in Daily life	Hurrying to catch the school bus before it starts	Navigating in crowds; do manual chores in cramped spaces efficiently	From basic tasks like eating, brushing teeth, to moving gracefully & efficiently	Carrying a pot of water up the stairs. Riding a cycle	Able to climb stairs, travel distances by foot or cycle without fatigue	Sitting on floor, sweeping, & generally avoiding muscle injuries	Carrying water cans, heavy groceries, lifting other heavy objects	Preventing lifestyle diseases like obesity, diabetes, and hypertension	Able to do hard work, without stressing the heart	Prevents respiratory ailments like asthma, bronchitis	Lower respiratory rate helps to relax and beat stress	Preserves health of stem cells, increases resistance to bacterial infections
Ideal Level	Run 50m in under 8.4 seconds	Shuttle run of 40m (4 X 10m) in under 10.8 seconds	Throw ball against wall and catch in alternate hands 20-29 times in 30 seconds	Do Standing Stork Test for atleast 25 seconds	Walk or Run atleast 2.2 kms in 12 minutes (Cooper's Test)	Stretch for atleast 6 cms in 'Sit & Reach Test' box	Perform atleast 38 sit-ups (knees bent) in 1 minute	Body Fat not more than 26% (Skin Fold Test)	Resting heart rate of atleast 72 beats per minute	Atleast 3 litres of air per forceful exhalation	≤ 20 breaths per minute under resting conditions	Ability to hold breath for atleast 30 seconds
How to Develop *		 	  	  	 	 	  	  	  	  	  	 

*For the above table, only exercises covered in this thesis have been considered



1.4 REASON FOR THE SELECTION OF RESEARCH STUDY

One of India's biggest strengths is its young population - a sizeable chunk of these youth reside in slums. Though high on deprivation, these slums play a vital role and are the wheels of the Indian economic engine. While the government places sizeable lot of resources in trying to improve hygiene, housing and education of these inhabitants, a lot more needs to be done still on the social quality of life front. Several NGO's try to address the social problems of slums (like alcoholism, juvenile crime, drug abuse, health, domestic abuse etc) through religion, counseling, and recently, through sports activities.

This study draws from the efforts and successes of such NGO's and aims to introduce workout regimes that can be easily adopted and regularly practiced by slum youth, notwithstanding their constraints. While efforts by NGO's have been in introducing sports like football, this study tries to introduce fitness regimes that would be a good fit into the lifestyle and living conditions of slum children. These exercises are part of the curriculum and performed by private school students but not so in case of government schools where slum children study. This fitness regime may also help bridge the gap between children in private schools versus government schools, in the participation and performance in big sporting events. The benefit of these exercises will be measured by selected Motor Fitness, Health-related fitness, and Physiological variables. The variables being measured have all been selected on the basis of their beneficial impact in the day to day life of slum children.

1.5 OBJECTIVES OF THE STUDY

The study is to investigate the status of motor fitness, health-related and physiological variables of students living in chennai slums

- ❖ This study will bring awareness among slum students about physical activities namely calisthenics exercise, recreational game, and aerobic Dance
- ❖ This study will also throw light on the effect of the aforementioned physical activities on motor Fitness, health-related and physiological variables of chennai slum students

1.6 STATEMENT OF THE PROBLEM

The research is being conducted to ascertain the "effect of different types of physical activities on selected motor fitness Health related fitness and physiological variables of chennai slum students."

1.7 HYPOTHESES

1. It is presumed that there would be a material beneficial impact on the selected motor fitness, health related fitness and physiological variables owing to the effect of callisthenic exercise among chennai slum students
2. It is presumed that there would be a material beneficial impact on the selected motor fitness, health related fitness and physiological variables owing to the effect of recreational games among chennai slum students.
3. It is presumed that there would be a material beneficial impact on the selected motor fitness, health related fitness and physiological variables owing to the effect of aerobic dance among chennai slum students.
4. It is presumed that there would be a material beneficial impact on selected motor fitness, health related fitness and physiological variables owing to the effect of callisthenic exercises, recreational games and aerobic dance among chennai slum students.

1.8 SIGNIFICANCE OF THE STUDY

1. The study may help to find out the current fitness state and potential of slum students residing in Zone IX Teynampet ward -109 to 126 , Chennai
2. The workouts proposed in the study may demonstrate the positive impact on the selected motor fitness variables, health-related fitness variables and physiological variables
3. The study may help to compare the effect of calisthenics, recreational games and aerobic dance on the selected motor fitness, health-related fitness and physiological variables

4. This study may help young aspiring sportspersons from slums to boost their performance in their selected motor fitness, health-related fitness and physiological variables by the workout proposed in the study
5. The study may help provide knowledge of physical activities and their importance and benefits in day to day life, to students who are residing in slums
6. The result of the study may be helpful for preparing and designing different types of physical activities and workouts for enhancing the health and fitness of students residing in slums

1.9 DELIMITATIONS

1. The study is delimited to the chennai slum area school boys who were studying from the sixth standard to ninth standard.
2. The Study considered 60 boys within the age group 12 to 15 years.
3. The Experimental treatment was restricted for 12 weeks, three days per week.
4. The following dependent variables are selected for this study
 - ❖ Motor Fitness Variables (Speed, Agility, Co-ordination & Balance)
 - ❖ Health Related Fitness Variables (Cardio-Respiratory Endurance, Flexibility, Muscular Strength & Body Composition)
 - ❖ Physiological Variables (Resting pulse rate & Vital capacity, Respiration rate & Breath Holding Time)
5. The following independent variables are selected for this study
 - ❖ Calisthenics exercise
 - ❖ Recreational games
 - ❖ Aerobic dances

1.10 LIMITATIONS

The following factors which could have an influence on the study have not been considered as they were deemed uncontrollable:

1. The subject's habits, lifestyle, daily routine, work, diet, etc
2. The motivation, interest, dedication and other psychological factors of the subjects
3. The influence of their academic pursuits, their parent's support and other domestic conditions
4. Subjects' earlier knowledge of any sports and games, and consequent physical condition as a result of playing such sport/game
5. The condition of the school ground and climatic conditions such as humidity, atmospheric temperature and meteorological factors.

1.11 DEFINITION OF IMPORTANT TERMS

1.11.1 Calisthenics Exercises

The researcher refers to “various calisthenics routines performed for overall body fitness via free hand exercises or workouts using light apparatus. These routines aim to improve strength and flexibility by primarily using one's own body to bend, twist, jump, kick, flex etc thereby exerting almost every part of the body **(Thomas 1967)**.”

1.11.2 Recreational Games

The researcher refers to “fun activities indulged by people during their leisure and which aim to provide physical, mental and cultural development; thereby promoting individual well-being and where required, societal change.” **(Hurd & Anderson, 2010)**.

1.11.3 Aerobic Dance

Aerobic dance is a sequence of choreographed movements from various genres of dance that are blended with stretching and strength training routines, rhythmically performed to music **(Dowdy, 1985)**.

1.11.4 Motor Fitness

Motor Fitness is that aspect of motor ability which focuses on one's scope for vigorous activity (**Hennery Allan Lipman, 2009**).

1.11.5 Speed

The researcher refers to "the capability to execute fast movements in a row in quick duration in the same direction" (**Singh, 1991**).

1.11.6 Agility

Researcher refers to "the ability to rapidly alter one's course while conducting any activity" (**Fresh, 1971**).

1.11.7 Co-ordination

The researcher refers to "one's capability of combining different body movements into particular routines. A basic requirement to perform, it hinges on the harmonious working of the nervous system and functioning ability of sense organs." (**Kansal 1916**).

1.11.8 Balance

The researcher refers to the capability of maintaining one's body in equilibrium for successful performance in sports activities, irrespective of whether the body is still (Static Balance) or in motion (Dynamic Balance) (**Singer, 1979**).

1.11.9 Health Related Physical Fitness

The researcher refers to "one's physical condition including internal organs being in healthy state, thereby enabling the person to efficiently function in both vigorous and recreational activities." (**Swain & Leotholtz, 2007**).

1.11.10 Cardio Respiratory Endurance

The researcher refers to “the aspect of physical fitness relating to ability of the cardio-respiratory mechanism to provide fuel during continuous exertions and to remove any products of exhaustion” (Fox, 1984).

1.11.11 Flexibility

The researcher refers to “the gamut of movements around a joint which, if adequate, can avoid trauma”. (Johnson & Nelson 1988).

1.11.12 Muscular Strength

The researcher refers to “capacity of the muscles to expend power while in action and which can be enhanced by operating against any resistance”. (Fox & Mathews, 1981).

1.11.13 Body Composition

The researcher refers to “the percentage of lean body mass and depot fat content in one’s body to assess one’s morphological condition” (Lawrence, 1973).

1.11.14 Physiology

The researcher refers to “the study of the constitution and activities of the normal human body. (Pralay Majumdar, 2005).

1.11.15 Resting Pulses Rate

The researcher refers to “the rate of heart beats per minute, assessed when a body is at rest”. (Sandhya Tiwari, 1999).

1.11.16 Vital Capacity

The researcher refers to “the utmost quantum of air that can be forcefully expelled out of the lungs following a maximal inhalation” (Pratt Joseph. H, 1922)

1.11.17 Respiratory Rate

The researcher refers to “the number of times a person inhales and exhales in a given period while at rest”. **(Fox & Mathews, 1981).**

1.11.18 Breath Holding Time

The researcher refers to “the longest period for which one can hold the breath after a deep inspiration”. **(Strukie, 1981).**