

Comparative Assessment of Various Sports Wear Fabric

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ABSTRACT

Sportswear has today become a momentous part of our daily life as people are getting more concerned about their health and physique in the present scenario. Also, the excess weight and lethargic mood of people have resulted in the augmentation of heart diseases, obesity and several other problems related to weight gain. Each one of us is today busy with our jobs which are mostly the seated ones allowing us to gain fat in all parts of our body. Moreover, the junk food consumed in ample of amount leads to more health issues. Thus, exercising is what should be added into our everyday practice which keeps us healthy and fit. The foremost concern while doing exercise is related to the outfit carries during the strenuous activity. This present research study is an attempt to propose a research on comparative assessment of various types of sportswear. For result analysis of present research study, sourced 3 types of fabric ploy propylene, polyester, polyester and cotton blend knit from company and 3 types of National/local sportswear brand Dida, Shivcharan, Exio t-shirt purchased from local market and 3 types of International sports wear brand Nike, Addidas, Puma t-shirts and trousers purchased from particular brand showroom and these total 9 types of different content fabrics, physical properties were test like , count, WPI(Wales per inch) ,CPI(course per inch),absorbency etc., after physical properties evaluation of these fabrics analysis them to each other and got a comparative assessment data .

Keywords: Comparative Assessment, Sportswear, Textile Fabric, National Brand, International Brand.

INTRODUCTION

a) Sports wear

Sportswear is the special clothing worn for playing sports or for informal leisure activities.

Sportswear as a necessary part of all the games, for sports and players themselves, it plays a practical protecting and comfortable role. Especially in all events, which reflects the significance of sportswear is more lavish. Sportswear plays a basis supporting and protective effects on players. At the same time, it also reflects the understanding and characteristics of a country or a nation to sports. Therefore, the design of sportswear has the presentation of nationality, rationality and sports consciousness levels.

Sports fabrics are technical materials which help to keep the wearer comfortable during exercise. The type of fabric required will depend upon the intensity of the exercise and the activity. Yoga clothing should use fabrics with good stretch ability for easy movement which will likely require the fabric to be of a knitted construction. Apparel for long distance running will keep the wearer in good comfort if it has excellent moisture wicking properties to enable sweat to transfer from the inside to the outside for the garment. Performance clothing for outdoor sports in the winter or snow sports ought to use breathable fabrics with very good insulating properties.[40]

In this present research study attempt a research on comparative assessment of various types of sportswear. In this result analysis of research study, sourced 3 types of fabric ploy propylene, polyester, polyester and cotton blend knit from company and 3 types of National/local sportswear brand Dida, Shivcharan, Exio t-shirt purchased from local market and 3 types of International sports wear brand Nike, Addidas, Puma t-shirts and trousers purchased from particular brand showroom and these total 9 types of different content fabrics, physical properties were test like tensile strength, tearing strength, crease recovery, count, EPI(ends per inch)PPI(picks per inch),absorbency etc., after physical properties evaluation

of these fabrics analysis them to each other and got a comparative assessment data of these fabric and developed a new better enhanced properties sportswear fabric.

b) Objectives:

- To know about local, National and International Brand.
- To analyzed Local and National Sportswear Brand Fabric and comparison to each other.
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- To analyzed Sportswear knitted fabric properties.
- To enhance comfort level of sportswear for athletics.

2 MATERIAL AND METHOD

In this chapter material and research methodology are mentioned in detail. Therefore all the relevant data of material and research methodology has been discussed in following section.

Material

Selection of material: 3 types of local Sportswear fabrics (LSF)poly knits 100% polyester, plain polyester -100% polyester, dot knit-100% polyester sourced from company 4 U.(Barhi) Sonipat, Haryana.

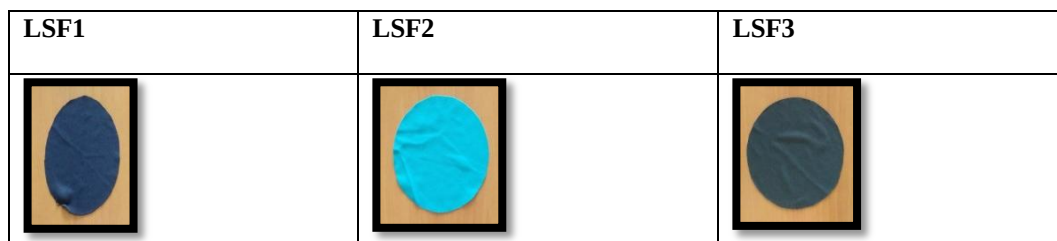


Fig : 1: Local Sportswear Fabrics (LSF)

National brand sportswear: 3 types of national Sportswear brand fabric (NSBF)Shivcharan, Dida, Exio t-shirts purchased from local market of Gohana (Sonipat),Haryana.



Fig.2: National Sportswear Brand Fabric (NSBF)

International brand sportswear: 3 types of International Sportswear brand Fabric (ISBF) Puma, Addidas, Nike t-shirts purchased from Rohtak ,Haryana.

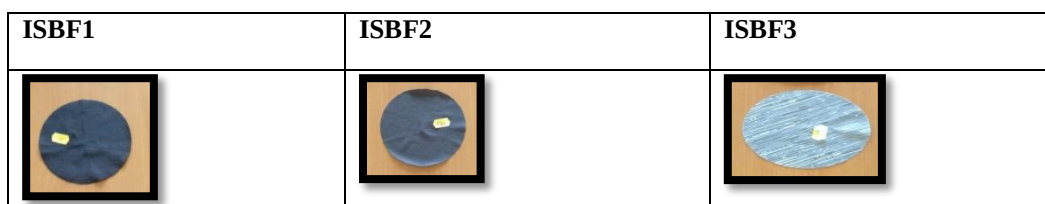


Fig.3: International Sportswear brand fabric (NSBF)

Construction detail of sportswear fabric

Table 1: Construction detail of sportswear fabric

Construction detail of sportswear fabric						
Sr.no	LSF		NSBF		ISBF	
	WPI	CPI	WPI	CPI	WPI	CPI
1	30	46	45	98	32	51
2	39	58	41	100	41	56
3	40	48	31	100	52	94

Methods and properties of sportswear fabric:

- Costing of material
- Raw material content
- WPI , CPI and construction detail
- GSM(Gram per square meter)
- Thickness
- Count
- Bursting strength
- Drop penetration test

3. RESULT AND DISCUSSION

In this chapter findings of present research study results are mentioned and discussed. Therefore all the relevant finding of results has been discussed in following section.

Introduction

Development in active sportswear fabrics has been progressing to perform high functions and to achieve comfort. The sportswear manufacturing textile industries not only keep their eyes on market diversification for fibrous materials but also on textile science and technology. The use of innovative textile science and technology in the manufacturing of sports and leisurewear fabrics is continuously enhancing day by day to fulfill the requirements for athletics and leisure activities for their better performance in the sports. The performance requirements of many sports goods often demand widely different properties. The contributing factors for developing active sportswear fabrics are: polymer science, fibre science, production techniques, lamination and finishing techniques to obtain sophisticated fibre , modified structure of yarns and fabrics. In this. Section all the relevant finding of results has been discussed.

Methods and properties of sportswear fabric:

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- Raw material content
- WPI , CPI and construction detail
- GSM(Gram per square meter)
- Thickness
- Count
- Bursting strength
- Drop penetration test
- Strechability

a) Costing of Material: In this research study 3 category of different sportswear fabric have chosen and analyzed to each other, these are given below:

1. Local sportswear fabric: Local sportswear fabric (LSF),procured from Industry.

2. National sportswear brand fabric: 3 types of National Sportswear Brand Fabric (NSBF) T-SHIRT purchased from local market of Gohana (Sonipat) Haryana.

- a) NSBF 1= T-Shirt 550 Rs.
- b) NSBF 2= T-Shirt 550 Rs.
- c) NSBF 3= T-Shirt 500 Rs.

3. International sportswear brand fabric: 3 types of International Sportswear Brand Fabric (ISBF) T-SHIRT purchased from Main market of Rohtak, Haryana.

- a) ISBF 1= T-Shirt 1700 Rs.
- b) ISBF 2= T-Shirt 1500 Rs.
- c) ISBF 3= T-Shirt 1250 Rs.

b) Raw material content

1. Local sportswear fabric: Local sportswear fabric (LSF), procured from Industry raw material content is 100% polyester of 3types of sportswear fabric.

- a) LSF1=100% polyester
- b)LSF2=100% polyester
- c) LSF3=100% polyester

2. National sportswear brand fabric: 3 types of National Sportswear Brand Fabric (NSBF) T-SHIRT, raw material content is 100% polyester

- a) NSBF 1= 100% polyester
- b) NSBF 2= 100% polyester
- c) NSBF 3= 100% polyester

3. International sportswear brand fabric: 3 types of International Sportswear Brand Fabric (ISBF) T-SHIRT raw material content is polyester and spandex blend.

- a) ISBF 1= 100% polyester
- b) ISBF 2= 95.9 % polyester and 4.1 % spandex.
- c) ISBF 3= 100% polyester

c) Construction detail of sportswear fabric

1. Local sportswear fabric: Local sportswear fabric (LSF), construction detail is given below:

- a) LSF1= 1) WPI (Wales per Inch) = 30
2) CPI (Course per Inch) =46
- b) LSF2= 1) WPI (Wales per Inch) = 39
2) CPI (Course per Inch) =58
- c) LSF3= 1) WPI (Wales per Inch) = 40
2) CPI (Course per Inch) =48

2. National sportswear brand fabric: 3 types of National Sportswear Brand Fabric (NSBF), construction detail is given below:

- a) NSBF 1= 1) WPI (Wales per Inch) = 45
2) CPI (Course per Inch) = 98
- b) NSBF 2= 1) WPI (Wales per Inch) = 41
2) CPI (Course per Inch) =100
- c) NSBF 3= 1) WPI (Wales per Inch) = 31
CPI (Course per Inch) =100

3. International sportswear brand fabric: 3 types of International Sportswear Brand Fabric (ISBF), construction detail is given below

- a) ISBF 1= 1) WPI (Wales per Inch) = 32

- 2) CPI (Course per Inch) =51
b) ISBF 2= 1) WPI (Wales per Inch) = 41
2) CPI (Course per Inch) =56
c) ISBF 3= 1) WPI (Wales per Inch) = 52
2) CPI (Course per Inch) =94

D) GSM (Gram per square meter)

Here 9 types of sportswear fabric GSM given below:

1. **Local sportswear fabric** : Local sportswear fabric(LSF),GSM is given below in table no 3.1:
2. **National sportswear brand fabric** : 3 types of National Sportswear Brand Fabric (NSBF), GSM is given below in table no 3.1::
3. **International sportswear brand fabric**: 3 types of International Sportswear Brand Fabric (ISBF), GSM is given below in table no 2::

Table 2: GSM of International sportswear brand fabric

GSM of sportswear fabric			
Sr. no	LSF	NSBF	ISBF
1	175.75	170	133.75
2	134.75	170	170.75
3	152.75	172	148.75

Effect of GSM:

GSM of 9 types of fabrics i.e local sportswear fabric, National sportswear brand fabric , International sportswear brand fabric has been evaluated and comparison to each other. GSM values and comparison of sportswear fabrics described below:-

- Highest GSM of NSBF (National sportswear brand fabric) than LSF and ISBF.
- GSM of LSF more than ISBF.
- GSM of ISBF (International sportswear brand fabric) less than LSF (Local sportswear) and NSBF (National sportswear brand fabric).

e)Thickness of material

Here 9 types of sportswear fabric thickness is given below:

Table3: Thickness of sportswear fabric

Thickness of sportswear fabric			
Sr.no	LSF	NSBF	ISBF
1	0.51	0.42	0.36
2	0.39	0.50	0.46
3	0.49	0.39	0.40

Effect of thickness:

Thickness of 9 types of fabrics i.e Local sportswear fabric, National sportswear brand fabric, International sportswear brand fabric has been evaluated and comparison to each other. Thickness values and comparison of sportswear fabrics described below:-

- Highest thickness of LSF than NSBF (National sportswear brand fabric) and ISBF.
- Thickness of NSBF (National sportswear brand fabric) more than ISBF.
- Thickness of ISBF (International sportswear brand fabric) less than LSF(Local sportswear Fabric) and NSBF(National sportswear brand fabric).

f) **Count** :Here 9 types of sportswear fabric count is given below:

1.**Local sportswear fabric** : Local sportswear fabric(LSF) count is given below:

Table 4: Count of Local sportswear fabric

Count of Local sportswear fabric		
LSF1	LSF2	LSF3
103.4 Denier	78.8Denior	98.4Denier

2.**National sportswear brand fabric** : 3 types of National Sportswear Brand Fabric (NSBF), count is given below:

Table 5: Count of National sportswear brand fabric

Count of National sportswear brand fabric		
NSBF1	NSBF2	NSBF3
104.2 Denier	103.8 Denier	160.0 Denier

3.**International sportswear brand fabric** : 3 types of International Sportswear Brand Fabric (ISBF), count is given below:.

Table 6: Count of International sportswear brand fabric

Count of International sportswear brand fabric		
ISBF1	ISBF2	ISBF3
This fabric is warp knitted, so that it cannot be unravel.	163.5 Denier	85.6 Denier

g) **Bursting strength**

Here 9 types of sportswear fabric bursting strength is given below:

Table 7: Bursting strength of sportswear fabric

Bursting strength of sportswear fabric		
LSF [1-2-3]	NSBF[1-2-3]	ISBF[1-2-3]
150 PSI	110 PSI	160 PSI
212 PSI	163 PSI	211 PSI
122 PSI	140 PSI	179 PSI

Effect of bursting strength:

Bursting strength of 9 types of fabrics i.e Local sportswear fabric, National sportswear brand fabric , International sportswear brand fabric has been evaluated and comparison to each other. Bursting strength values and comparison of sportswear fabrics described below:-

- Bursting strength of ISBF (International sportswear brand fabric) is Highest than NSBF (National sportswear brand fabric) and LSF.
- Bursting strength of LSF more than NSBF.
- Bursting strength of NSBF (International sportswear brand fabric) less than LSF (Local sportswear Fabric) and ISBF (National sportswear brand fabric).

h) **Drop penetration test**

- Here 9 types of sportswear fabric bursting strength is given below:

Table 8: Water drop test of sportswear fabric

Water drop test of sportswear fabric						
Sr no	LSF		NSBF		ISBF	
	Front	Back	Front	Back	Front	Back
1	2 sec	3 sec	2sec	2sec	3 sec	4 sec
2	3 sec	2sec	2 sec	2 sec	4 sec	4 sec
3	2 sec	1 sec	2 sec	3 sec	2 sec	3 sec

Effect of Drop test (Absorbency):

Absorbency of 9 types of fabrics i.e Local sportswear fabric, National sportswear brand fabric, International sportswear brand fabric has been evaluated and comparison to each other. Absorbance values and comparison of sportswear fabrics described below:-

- Absorbency of ISBF (International sportswear brand fabric) is more than NSBF (National sportswear brand fabric) and LSF (local sportswear fabric).
- Absorbency of back side of all 9 types of fabric more than front side.

i)Strechability

Here 9 types of sportswear fabric strechability is given below:

Table 9: Strechability of sportswear fabric

Strechability of sportswear fabric						
Sr no	LSF		NSBF		ISBF	
	Warp	Weft	Warp	Weft	Warp	weft
1	0.4	0.6	0.3	0.5	0.2	0.4
2	0.4	0.5	0.2	0.225	0.25	0.4
3	0.2	0.3	0.2	0.225	0.375	0.475

Effect of strechability

Strechability of 9 types of fabrics i.e Local sportswear fabric, National sportswear brand fabric , International sportswear brand fabric has been evaluated and comparison to each other. Strechability values and comparison of sportswear fabrics described below:-

- Strechability of LSF (Local sportswear fabric) is more than NSBF (National sportswear brand fabric) and ISBF (International sportswear brand fabric) .
- Strechabilty in Weft direction of all 9 types of fabric more than warp direction.

CONCLUSION

The findings of present study can be concluded as:

- GSM (Gram per square meter) of NSBF (National sportswear brand fabric) highest than LSF and ISBF. GSM of LSF more than ISBF. GSM of ISBF (International sportswear brand fabric) less than LSF (Local sportswear) and NSBF (National sportswear brand fabric).
- Thickness of LSF (Local sportswear fabric) highest than NSBF (National sportswear brand fabric) and ISBF (International sportswear brand fabric).Thickness of NSBF (National sportswear brand fabric) more than ISBF. Thickness of ISBF (International sportswear brand fabric) less than LSF (Local sportswear Fabric) and NSBF (National sportswear brand fabric).

- Bursting strength of ISBF (International sportswear brand fabric) is Highest than NSBF (National sportswear brand fabric) and ISBF. Bursting strength of LSF more than NSBF. Bursting strength of NSBF (International sportswear brand fabric) less than LSF (Local sportswear Fabric) and ISBF (National sportswear brand fabric).
- Absorbency of ISBF (International sportswear brand fabric) is more than NSBF (National sportswear brand fabric) and LSF (Local sportswear fabric). Absorbency of back side of all 9 types of fabric more than front side.
- Stretchability of LSF (Local sportswear fabric) is more than NSBF (National sportswear brand fabric) and ISBF (International sportswear brand fabric). Stretchability in Weft direction of all 9 types of fabric more than warp direction.

Overall output of the present research study, determine the, International sportswear brand fabric more comfortable and suitable to wear than national sportswear brand fabric and local sportswear fabric. Local sportswear fabric and National brand sportswear fabric equally comfortable to wear for athletics. This present research study also determines the better choice of sportswear for athletics.

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