



# FUNCTIONALLY DESIGNED SUMMER PROTECTIVE SHIRTS

Lara KARLAVARIS; Zlatka MENCL-BAJS; Antoneta TOMLJENOVIĆ

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# Introduction

## o Protection aspects

Present-day need for effective personal protection against the harmful impact of sunlight, as well as mosquito protection during summer can be provided by protective shirts made of appropriate shirtings.

- o Generally, fragrance compound could be directly added into the textiles. Microencapsulated citronella oil or limonene based insecticide for mosquito repellent finishing of cotton fabrics exhibit excellent protection and are activated during wear to release the specific aromas.
- o Increasing the UV protective effectiveness of the shirts could be achieved by using of tightly structured shirting fabrics. Proper finishing can be applied to the fabrics - e.g. optical brighteners and/or UV absorbers.



## o **Aspects of the costume**

- o For successful design is necessary to know the elements of traditional dressing. Almost all European ethnic dresses include white shirt as a component.
- o The shirt was generally worn as a part of over-garment that covered the torso and arms. Croatian women's ethnic dresses of e.g. Posavina or Slavonija were made with many folds, creases and lace.
- o White shirt has been an integral part of urban dress through the recent history, it is a symbol of the business world and universal common dressing.



Croatian traditional ethnic dress of Slavonija



## ○ Functional aspects

- UV protective clothing must be designed to protect the upper (torso), lower or upper and lower body completely. When dealing with female UV protective shirts, these could be constructed in such way that shading and covering as soon as greater part of neck, bust and arms. Folded and crinkled details increases reflection of direct UV radiation.
- When dealing with mosquito protective shirts, these should be constructed in such way that covering as soon as greater area of the body.
- Considering all these aspects, following the current trends and taking care about traditional heritage, in this work are presented female protective summer shirts made of white shirting woven fabrics and functionalized for UV and mosquito protection.



# ○ Materials

- Summer protective shirts were designed of white cotton poplins that can improve the thermal comfort of products by increasing reflection of visible and infrared radiation.
- All the fabrics fulfill the requirements of Öko-tex standard 100.

## Characteristics of white shirting fabrics

Article name	Weave	Weight (g m <sup>-2</sup> )	Threads/cm		Yarn count (tex)		Tensile strength (N)	
			Warp	Weft	Warp	Weft	Warp	Weft
SIMO	plain	106	53	28	12	12	355	205
LADA	plain	130	54	29	14	14	380	260
CELIA	structured	140	48	32	16.5	16.5	480	530
JANICA	structured	180	33	24	25	35.5	460	520

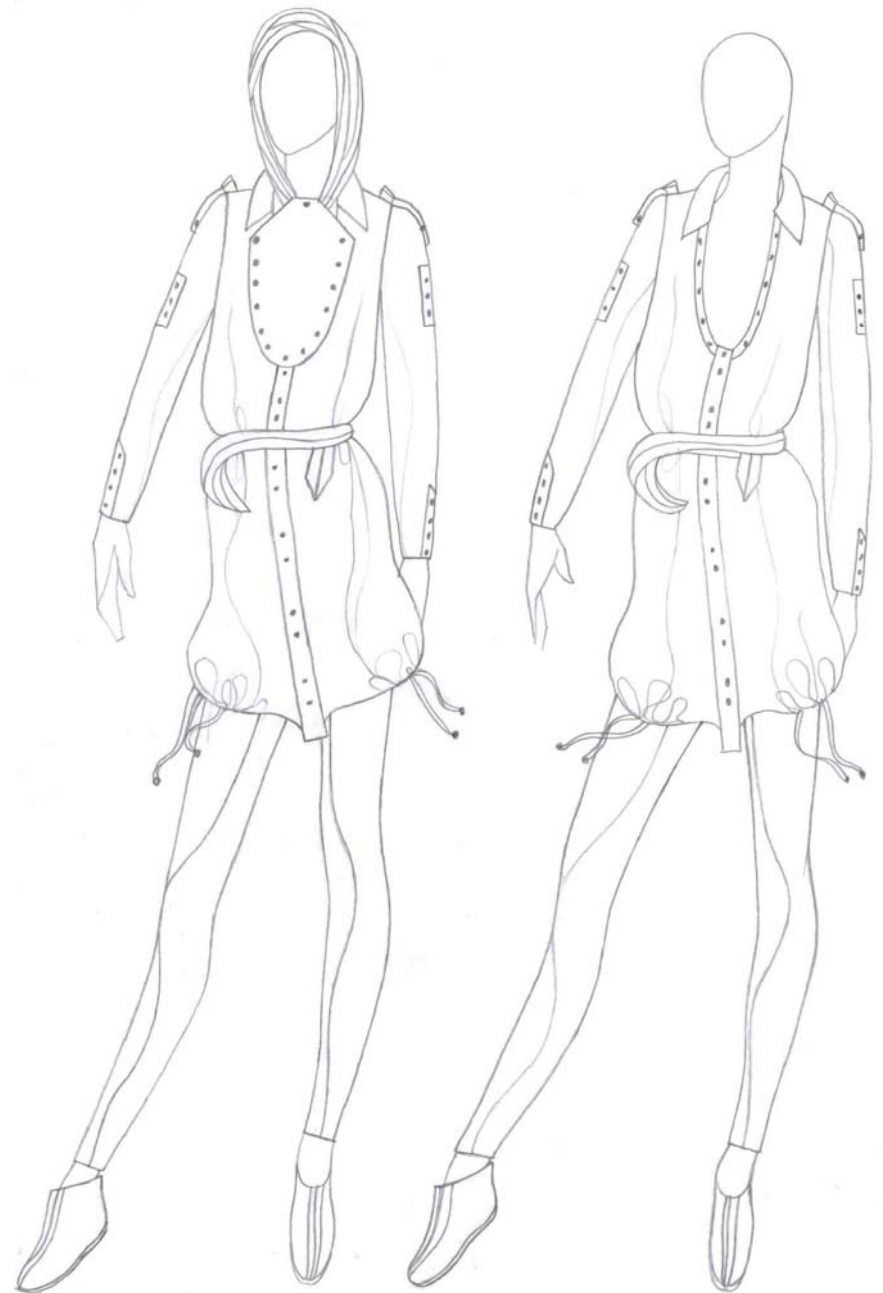


# ○ Functional design

- Lara Karlavaris proposes two collections of functionally designed female shirts: shirts - dresses and shirts – overalls (with length below the patella or adaptive length) for daily and evening occasions.
- As female ultraviolet and mosquito protective shirts should be designed in such way covering the greater area of the body, especially - neck and bust, and knowing that application of multilayer construction increases reflected and scattered part of UV radiation light, Lara Karlavaris suggests the multiple collars. Shirts have long or  $\frac{3}{4}$  sleeves. Protection of the e.g. shoulders, chest, arms and legs increases crinkled or folded (plissé) details which also had a decorative role.



Protective shirt – dress with functionally designed hood and protector for bust of adaptive design: wearable with hood and bust protector or without them







Protective shirt-dress with folded hood and folded (plissé) details on the front , with two collars and implemented crinkled details on the sleeves





Protective shirt – dress with functionally designed hood and multilayered collars of adaptive positions





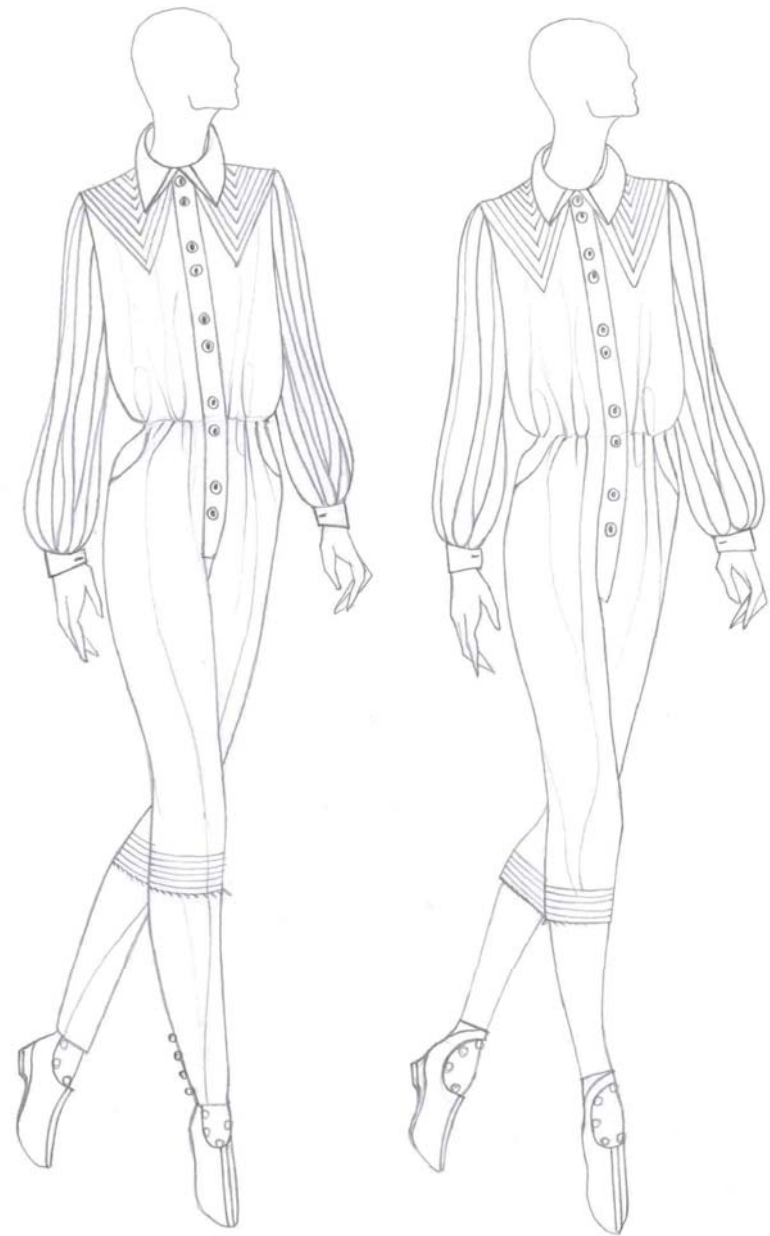
Protective shirt-dress with folded hood and plissé details on the sleeves, and multilayered collars





Protective shirt – overall with folded sleeves, trousers and double layer of folded fabric in the shoulders





Protective shirt-overall with folded sleeves and yoke, and with trousers of adjustable length

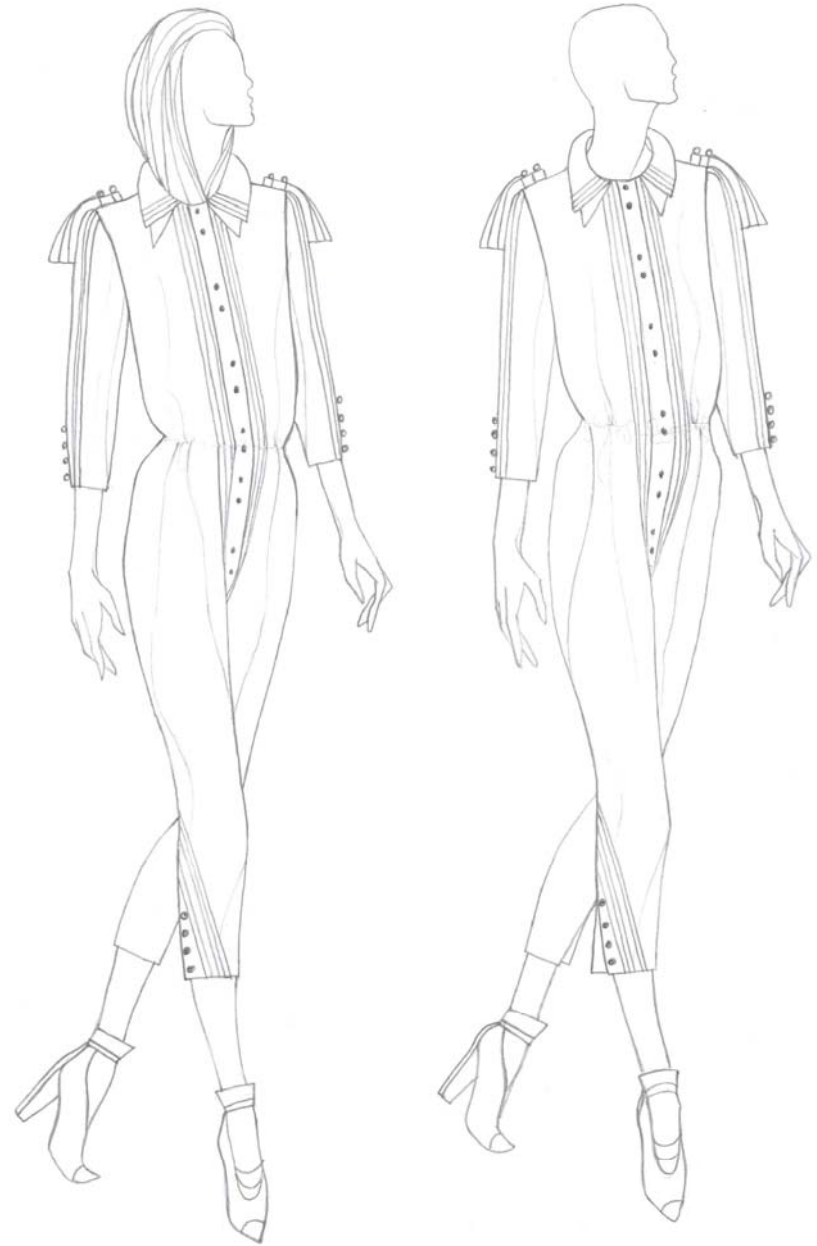


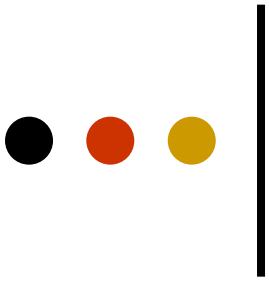
Protective shirt – overall with folded (plissé) hood and folded sleeves, with multiple collars and with crinkled details on trousers





Protective shirt-overall with  
folded (plissé) hood and details





Thank you for your attention