ERGONOMICS ABLUTION (WUDU') WORKSTATION DESIGN FOR SHOPPING COMPLEX

INVENTOR : DR. MIRTA WIDIA
FACULTY : INDUSTRIAL AND SCIENCES TECHNOLOGY
UNIVERSITY : UNIVERSITY OF MALAYSIA PAHANG
EMAIL : mirta@ump.edu.my
CO-INVENTORS : AMIRUL ASYRAF BIN JAAFAR

BACKGROUND

Ablution workstation is considered as one of the crucial public facilities especially in country with high Muslim population, but still lacking specifically regarding the ablution area (Besari et al., 2009)

The design for the ablution workstation should consider and examine the element of humanities to maintain the law of Islam. For low-risk, secure and user-friendly settings, the ergonomic feature should be considered

PREVIOUS DESIGN

Figure : Ablution workstation at Mall in Kuantan

OBJECTIVE

To propose an improved design of the ablution workstation based on ergonomic criteria (anthropometry) and user satisfaction

METHODOLOGY

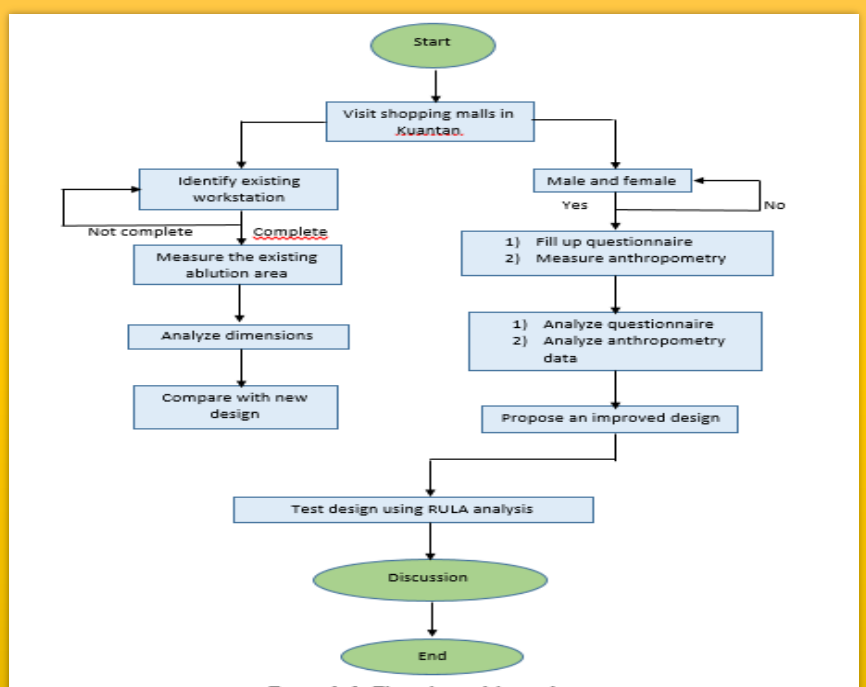


Figure 3. 2: Flow chart of the study

ERGONOMICS ABLUTION (WUDU') WORKSTATION DESIGN

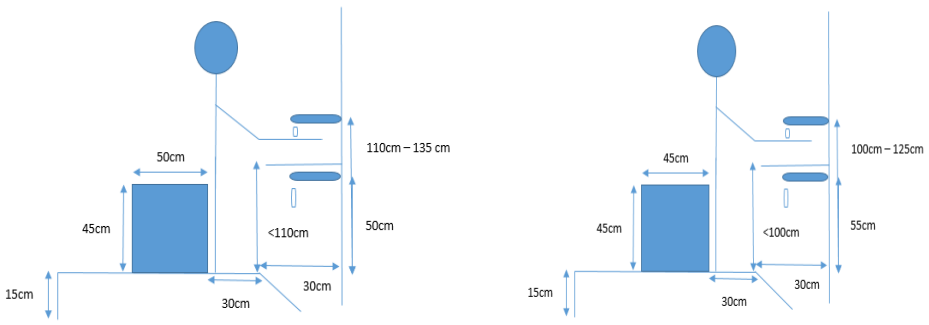
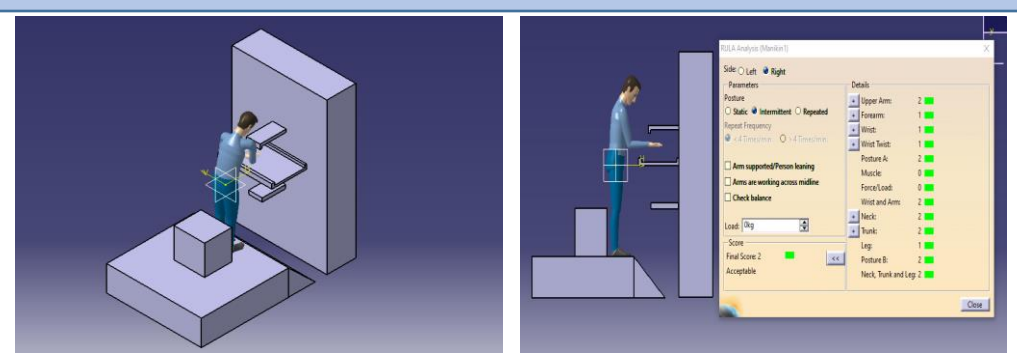


Figure: Proposed design for male and female ablution workstation

Component	Anthropometric data	Reference	Dimension (Male)	Dimension (Female)
Seat height	Popliteal height	50th percentile	45cm	45cm
Seat length	Buttock popliteal height	50th percentile	50cm	45cm
Seat width	Hip breadth	50th percentile	40cm	40cm
Legroom	Foot length	95th percentile	30cm	30cm
Upper Tap height	Between shoulder height and elbow height	50th percentile	110-135cm	100-125cm
Lower tap height	Knee height	50th percentile	60cm	55cm
Tap-to-user-distance	Upper arm length + Forearm hand length	50th percentile	<85cm	<75cm
Floor elevation		Existing design	15cm	15cm
Sink height	Below elbow height	50th percentile	<110cm	<100cm
Sink length	Forearm hand length	50th percentile	50cm	45cm
Sink width			30cm	30cm
Drain width		Existing design	30cm	30cm



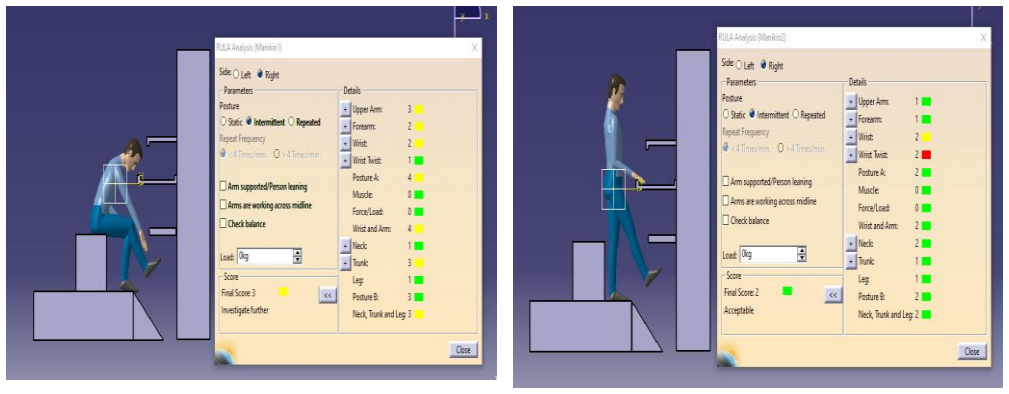


Figure: Proposed design of male ablution workstation in 3D dimension and RULA analysis

PUBLICATION

Ergonomics Ablution (Wudu') Workstation Design For Shopping Complex submitted to Jurnal Optimasi Sistem Industri (JOSI)

NOVELTY

- An ablution workstation was designed based on **Malaysian anthropometric dimensions and user satisfaction**. The analyse was done using CATIA V5R21 for posture investigation using RULAs.
- **Automatic tap** for both upper and lower tap by using an infrared sensor to minimize water consumption.
- This effort will become one of the significant social contributions to our population in developing our nation holistically.