

# Face painting and body-painting in upper limb below elbow joint as a method of teaching for igniting the interest of learning surface marking among undergraduate MBBS students

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## Abstract

**Background:** Teaching surface marking is more challenging than any other topic in Anatomy. Formalin embalmed cadavers has been used for teaching surface marking from ages. Formalin is a wonderful embalming agent, but one disadvantage is that it hardens the tissues. Although the cadaver is well preserved when formalin is used as an embalming agent, the negative aspect is the bony prominences are not very well felt. The prominences and bony landmarks are the most important aspects when it comes to surface marking. **Objectives:** 1. To compare Face painting/Body painting method over traditional cadaver-based teaching method to teach the surface anatomy. 2. To assess the students perception about the teaching learning methods. **Methods:** This study was done in the Department of Anatomy, Kanachur Institute of Medical Sciences, Mangalore. The study was conducted from February 2019 to March 2019. One hundred students were equally divided into two groups were selected based on stratified randomization method. **Results:** In our study comparison of the Perception between the two groups shows that Perception scores were higher in Body Painting group with a t value of -20.522 and is statistically significant with a p value of <0.001 Comparison of the OSPE between the two groups shows that OSPE scores is higher in Body Painting group with a t value of -6.945 and is statistically significant with a p value of <0.001 **Conclusion:** Body painting method for surface marking is better perceived by the students. The OSPE scores also indicate its effectiveness in teaching the surface marking.

**Key Words:** Body Painting, Traditional, Cadaver based, Surface Marking, Anatomy Teaching.

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## INTRODUCTION

Traditionally teaching Surface Anatomy has been done using dried and mummified human bodies. From our past experience at Kanachur Institute of Medical Sciences, it was found that teaching surface anatomy for MBBS 1st year students is often boring and monotonous. It is also found that students also pay less attention for the same. Medical Education is becoming more and more

challenging as we get less number of cadavers to teach<sup>1</sup>. Even if it is available it is probably high-time to understand that formalin is a strong carcinogen and unnecessary exposure to the same is not recommended. Formalin is not only an embalming substance but also a hardening substance which makes it very difficult to understand the important landmarks. It is also understood that the study of Anatomy is slowly shifting from traditional cadaver based teaching to studying Anatomy in live Humans<sup>2</sup>. Many of the students also find it difficult to reproduce if practised on a mummified cadaver and it is not easily understood. It is a well-known fact that doing an activity by reading and understanding a subject will always be beneficial on a long basis<sup>3,4</sup>. One more thing that has to be understood is the shortage of time for training the first year students, so more of interactive sessions should be incorporated in the system. Many authors have attempted this technique and have been successful in making this effort an enjoyable and memorable sessions<sup>5,6</sup>. This study puts in an effort to

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understand the student’s perspective in using this method in teaching surface Anatomy and ignite a small interest in them so as to practise more of the same. A sincere effort has also been put to understand the reproducibility by evaluating using structured questions at the end of each session and compare it with traditional methods of learning.

### MATERIALS AND METHODS

- Design: Interventional, Cross-over Design
- Settings: This study was done in the Department of Anatomy, Kanachur Institute of Medical Sciences
- Subjects: I year MBBS Students.
- The study was done from Feb 2019 to March 2019 (2 Months duration)
- Sample Size: 100 students divided into 2 groups
- Intervention: Body painting using non-toxic, non-absorbable body paint and surface marking.
- Tools: Validated Questionnaire and OSPE

#### • Inclusion Criteria:

1<sup>st</sup> MBBS students of 2018 batch

#### • Exclusion Criteria:

Those students who have not given valid consent and who were absent for one class or for assessment.

• Data Collection: Likert’s scale analysis and OSPE score.

#### • Analysis:

- Mann Whitney U test was used to analyse perception between two methodologies. Also perception was analysed using unpaired t test..

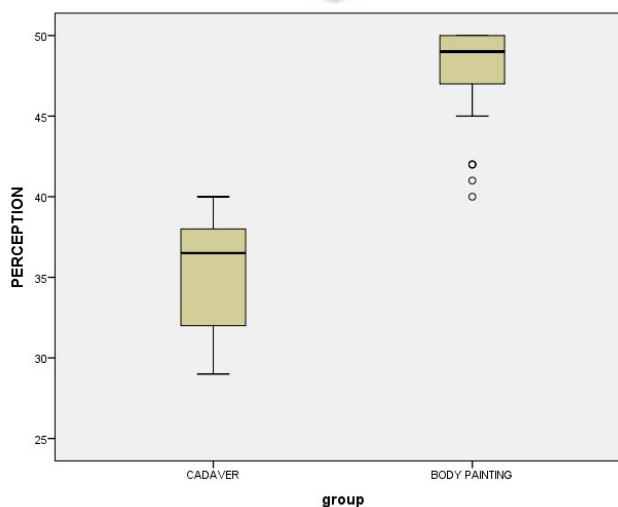
- Statistical significance of comparison of two teaching learning methods was obtained using unpaired t test.

- Paired t test was used to analyse the OSPE scores between the immediate scores and the scores obtained after 15 days



Image 1: Body painting below elbow joint and face painting

	CADAVER(Traditional Method)					BODY PAINTING MEHOD					Z	P Value
	Mean	SD	Max	Median	Min	Mean	SD	Max	Median	Min		
PERCEPTION	35.52	3.27	40	36.5	29	47.7	2.63	50	49	40	-8.648	<u>&lt;0.001</u>



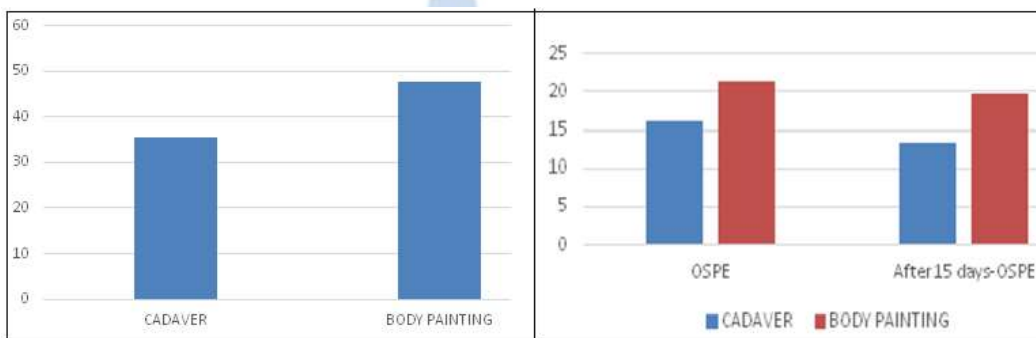
Graph 1: Mann Whitney U Test for Perception Score between two groups:

**Table 2:** Independent t test to compare between the two groups

	group	N	Mean	Std. Deviation	t	df	P VALUE
PERCEPTION	CADAVER	50	35.52	3.272	-20.52	93.65	<b>&lt;0.001</b>
	BODY PAINTING	50	47.7	2.628			
OSPE	CADAVER	50	16.14	4.305	-6.945	88.245	<b>&lt;0.001</b>
	BODY PAINTING	50	21.32	3.047			
After 15 days-OSPE	CADAVER	50	13.34	4.158	-8.739	98	<b>&lt;0.001</b>
	BODY PAINTING	50	19.7	3.032			
DIFFERENCE IN OSPE IN 15 DAYS	CADAVER	50	2.8	5.031	1.336	90.045	0.185
	BODY PAINTING	50	1.62	3.703			

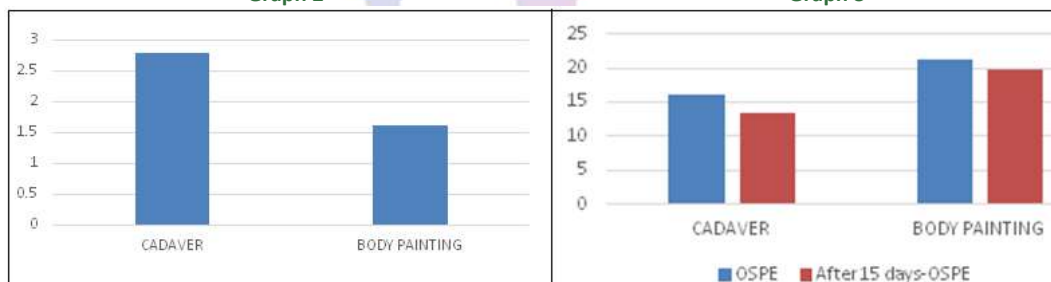
**Table 2:** Paired t test for comparison of the before and after values in each group separately

group		N	Mean	Std. Deviation	Paired Differences		t	df	P VALUE
					Mean Difference	Std. Deviation			
CADAVER	OSPE	50	16.14	4.305	2.8	5.031	3.936	49	<b>&lt;0.001</b>
	After 15 days-OSPE	50	13.34	4.158					
BODY PAINTING	OSPE	50	21.32	3.047	1.62	3.703	3.094	49	0.003
	After 15 days-OSPE	50	19.7	3.032					



**Graph 2**

**Graph 3**



**Graph 4**

**Graph 5**

**Graph 2:** The Mean Perception Score in the two methods; **Graph 3:** Mean OSPE Scores immediately after the teaching compared to mean OSPE score after 15 days; **Graph 4:** Difference between Mean OSPE Scores immediately after the teaching compared to mean OSPE score after 15 days; **Graph 5:** Difference in OSPE scores in each method observed immediately and the OSPE scores after 15 days.

## DISCUSSION

In our study the traditional cadaver-based method the mean score was observed to be 35.52 with a standard deviation of 3.27. The maximum score was 40. The median score was found to be 36.5 and the minimum score was found to be 29.

In the body painting based method the mean score was observed to be 47.7 with a standard deviation of 2.63. The

maximum score was 50. The median score was found to be 49 and the minimum score was found to be 40. The Z-Value was found to be -8.648 and the p-value was found to be <0.001. In our study comparison of the Perception between the two groups showed that Perception is higher in Body Painting group with a t value of -20.522 and is statistically significant with a p value of <0.001. Comparison of the OSPE between the two groups shows

that OSPE is higher in Body Painting group with a t value of -6.945 and is statistically significant with a p value of <0.001. Comparison of the After 15 days-OSPE between the two groups showed that After 15 days-OSPE is higher in Body painting group with a t value of -8.739 and is statistically significant with a p value of <0.001. Comparison of the difference in OSPE in 15 days between the two groups showed that difference in OSPE in 15 days is higher in cadaver group with a t value of 1.336 and is statistically non-significant with a p value of 0.185. In cadaver based teaching on comparison of the mean values of OSPE and After 15 days-OSPE the mean values of OSPE is higher with a difference of 2.8 is statistically significant with a p value of <0.001. In Body Painting method on comparison of the mean values of OSPE and After 15 days-OSPE the mean values of OSPE is higher with a difference of 1.62 is statistically significant with a p value of 0.003. In a study conducted by Komala Nanjundiah *et al*<sup>7</sup> the students had opined the body painting method was far superior compared to the conventional methods of teaching. There was active participation, peer to peer learning, the sessions were enjoyed and interesting. The students also opined that they could practise this in their hostels as well. So this method showed that the body painting method was superior when compared to the traditional method in terms of retaining the knowledge and also the reproducibility. My study is in agreement with this study. But the difference is that in my study the study population was uniform. The study population was mixed. They had physiotherapy and dental students in their study. The perception in their study was only taken from the face painting group and the comparison was not drawn. We are also in agreement with the other studies conducted by Paul G. McMenamin<sup>2</sup> who in their study introduced integrated body painting with clinical skills teaching sessions in parts of respiratory, musculo-skeletal and head and neck regional anatomy teachings and found that the students actively participated and with the aid of powerful visual images of underlying anatomy were able to perform better. The clinical implication was not done in my study but it would be great to do so if the study was to be continued. We also stand in agreement with the study conducted by Haylen Green *et al*<sup>8</sup> who conducted a pilot study on a qualitative assessment of student attitudes to the use of body painting as a learning tool in 1st year Human Anatomy learning and came to a conclusion that there was no significant difference in the reported levels of enjoyment experience during body painting activities.

### SUMMARY

In traditional cadaver based method the mean score was observed to be 35.52 with a standard deviation of 3.27. In

the body painting based method the mean score was observed to be 47.7 with a standard deviation of 2.63. The Z-Value was found to be -8.648 and the p-value was found to be <0.001. Perception between the two groups showed that Perception is higher in Body Painting group with a t value of -20.522 and is statistically significant with a p value of <0.001. Comparison of the OSPE between the two groups shows that OSPE is higher in Body Painting group with a t value of -6.945 and is statistically significant with a p value of <0.001. Comparison of the After 15 days-OSPE between the two groups showed that After 15 days-OSPE is higher in Body painting group with a t value of -8.739 and is statistically significant with a p value of <0.001.

### CONCLUSION

Body painting teaching method has turned out to be the new favourite when it comes to learning the surface marking. The study shows that the perception of the students was better and the OSPE score was better when compared immediately after teaching. When the students were tested after 15 days the students in body painting method were able to perform better suggesting a long term retaining ability of the acquired knowledge.

### RECOMMENDATIONS

Traditional Surface marking teaching in the initial part can be taught using the Body Painting method to generate or ignite an interest in the 1st year MBBS students and then can be replaced by traditional method for continuing the teaching.

### LIMITATIONS

The time was restricted so cross over was done only to give the students an equal opportunity to understand the subject in depth. The scores if would be analysed would draw more conclusions. This method can be used only to create an interest and cannot replace the older traditional methods fully as the teaching continues for other areas of the body.

### REFERENCES

1. McMenamin PG. Body painting as a tool in the clinical anatomy teaching. *Anatomical Sciences Education*, 2008; 1(4): 139-44.
2. Ganguly PK, Chanz LK. The living anatomy in the 21st century: how far can we go? *South East Asian Journal of Medical Education*, 2008; 2(2): 52-57.
3. Azer SA. Learning the surface anatomy: Which learning approach is effective in an integrated PBL curriculum? *Medical Teacher*, 2011; 33:78-80.
4. Pandey P, Zimitat C. The medical students' learning of the human anatomy: memorisation, understanding and visualization: *Medical education*, Jan 2007; 41(1):7-14.

5. Finn GM, McLachlan JC. A qualitative study on the student responses to body painting. *Anatomical Sciences Education*, 2010; 3(1):33-38.
6. Op Den Akker JW, Bohnen A, Oudegeest WJ, Hillen B. Giving color to a new curriculum: Body painting as a tool in medical education: *ClinAnat*, 2002; 15(5):356-62.
7. KomalaNanjundaiah, Sheshgiri Chowdapurkar. Body Painting-A tool which can be used to teach Surface marking; *Journal of Clinical and Diagnostic Research*. 2012 October, Vol-6 (8): 1405-1408
8. Haylen Green, Manisha R Dayal. A qualitative assessment of student attitudes to the use of body painting as a learning tool in 1st year Human Anatomy:A Pilot Study. *International Journal of Anatomy and Research* 2018, Vol 6(2.1):5134-44.

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