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# Intense Pulsed Light and Heated Eye Mask Therapies for the Treatment of Dry Eye Syndrome

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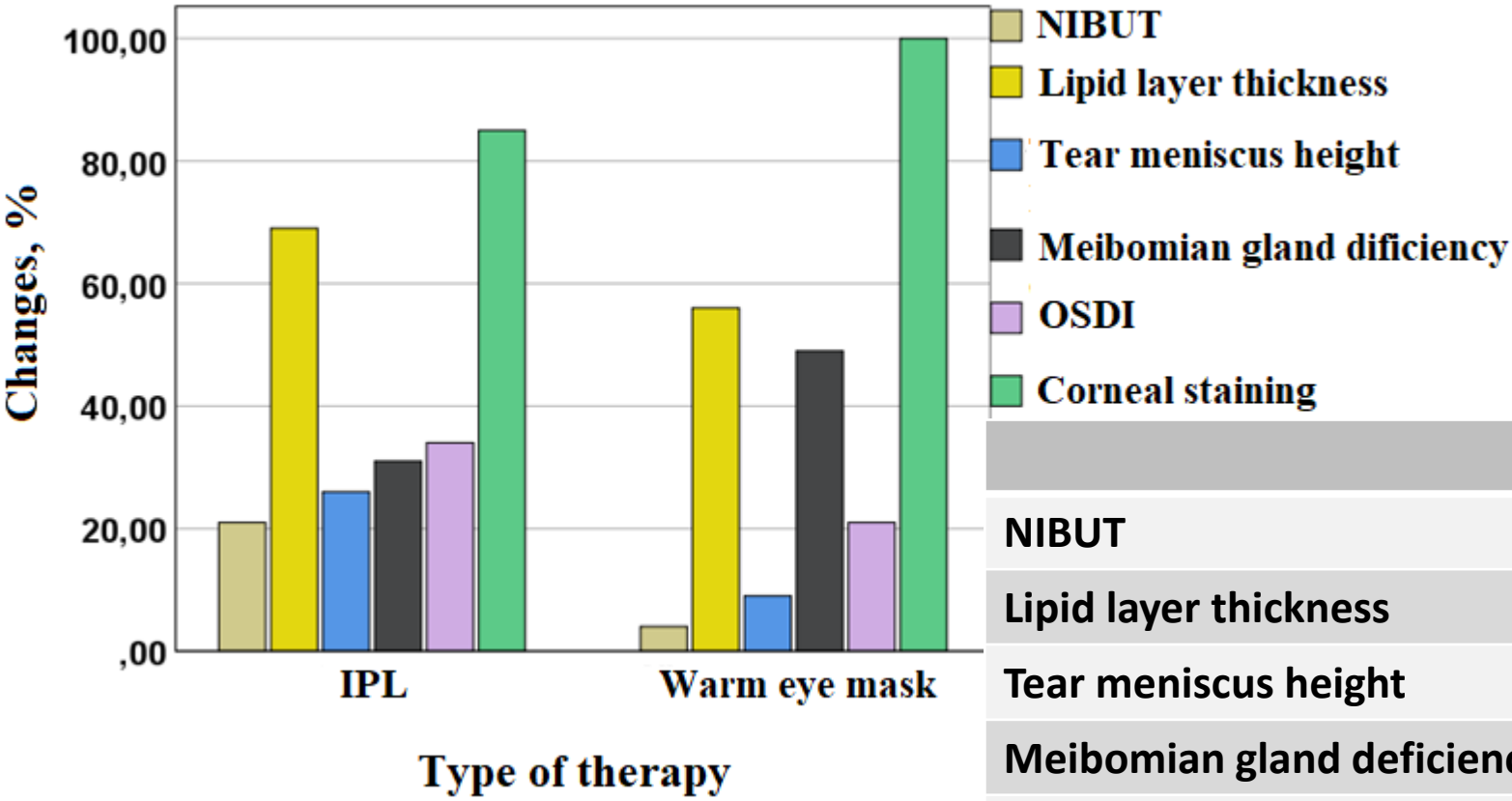
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- **Background:** At present 5-30% of the population 50 years and older suffer from dry eye disease (*DEWS*, 2007). The goal of the dry eye disease treatment is to improve tear film stability and eye surface condition, thus reducing the number of symptoms and their intensity.
- **Aim:** The aim of the current study was to evaluate the effectiveness of intense pulsed light (IPL) and warm mask therapies as a treatment of dry eye syndrome.
- **Methods:** 12 participants ( 9 females and 3 males). All of them had dry eye disease. Tear film diagnostics was performed using the *SBM Systemi Ocular Surface Analyzer*. Different tests were performed: interferometry, tear film non-invasive break up time (NIBUT), tear meniscus height, eyelid meibography, slit lamp examination, corneal staining with fluorescein, Ocular Surface Disease Index (OSDI) questionnaire. Six participants underwent two IPL procedures, once a month. *OPTIMA IPL M22* laser was used for therapy. Another six participants received warming mask therapy for the duration of two weeks, seven minutes twice a day. All participants used *Eye Doctor Hot & Cold Dry eye Compress*.

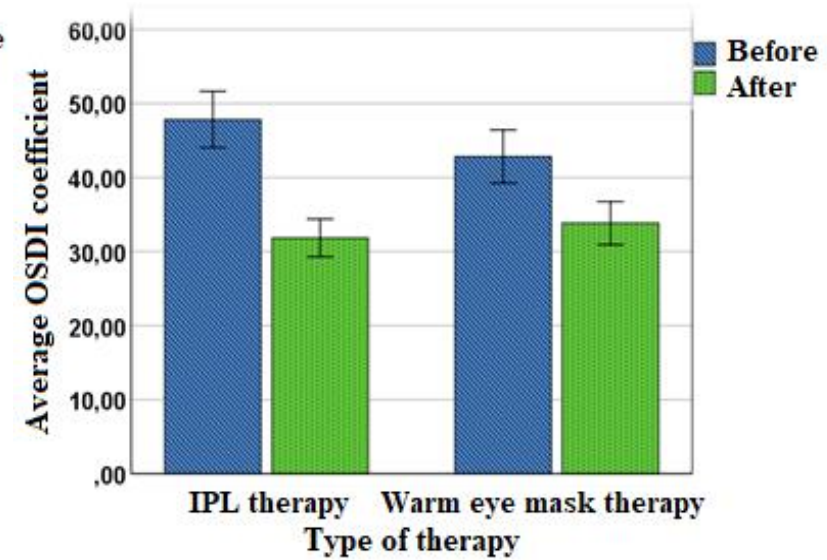
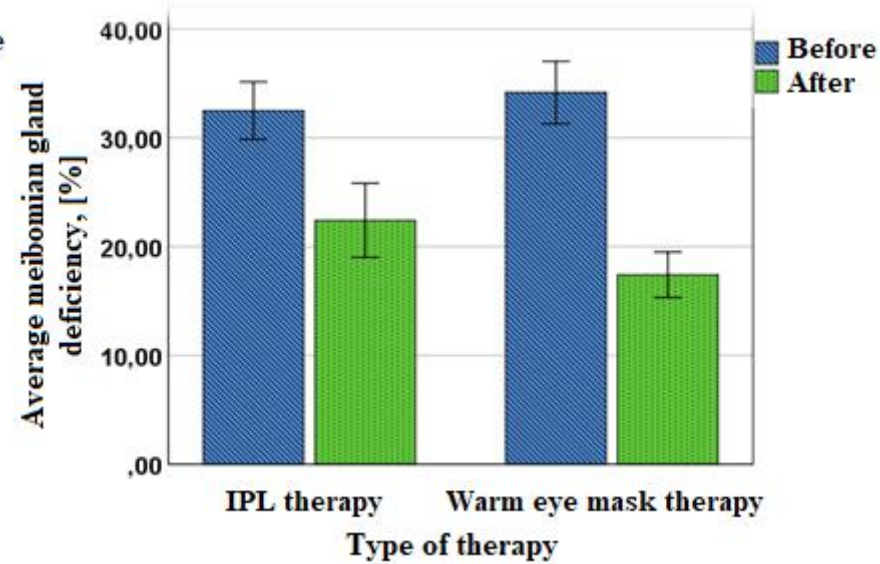
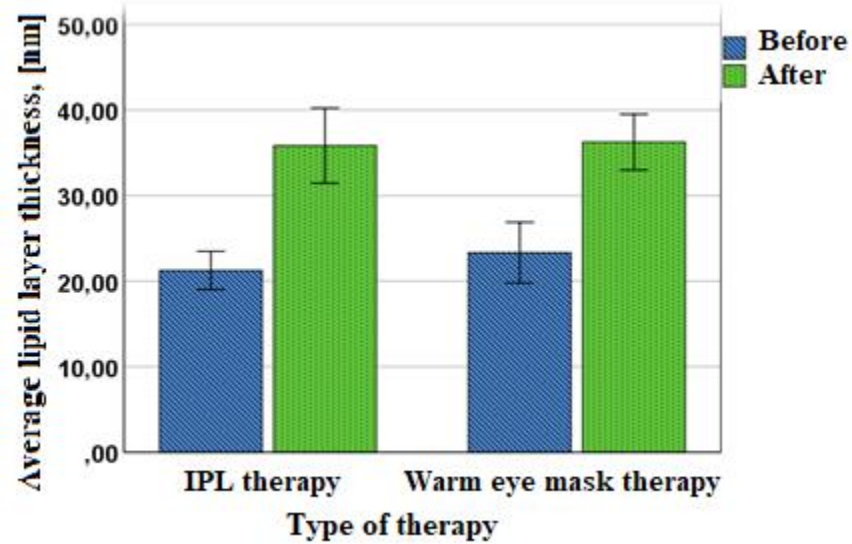
# Research Results

Changes after therapies



	IPL therapy	Warm eye mask therapy
NIBUT	21 %	4 %
Lipid layer thickness	68 %	56 %
Tear meniscus height	26 %	9 %
Meibomian gland deficiency	31 %	49 %
OSDI	34 %	21 %
Corneal staining	85 %	100 %

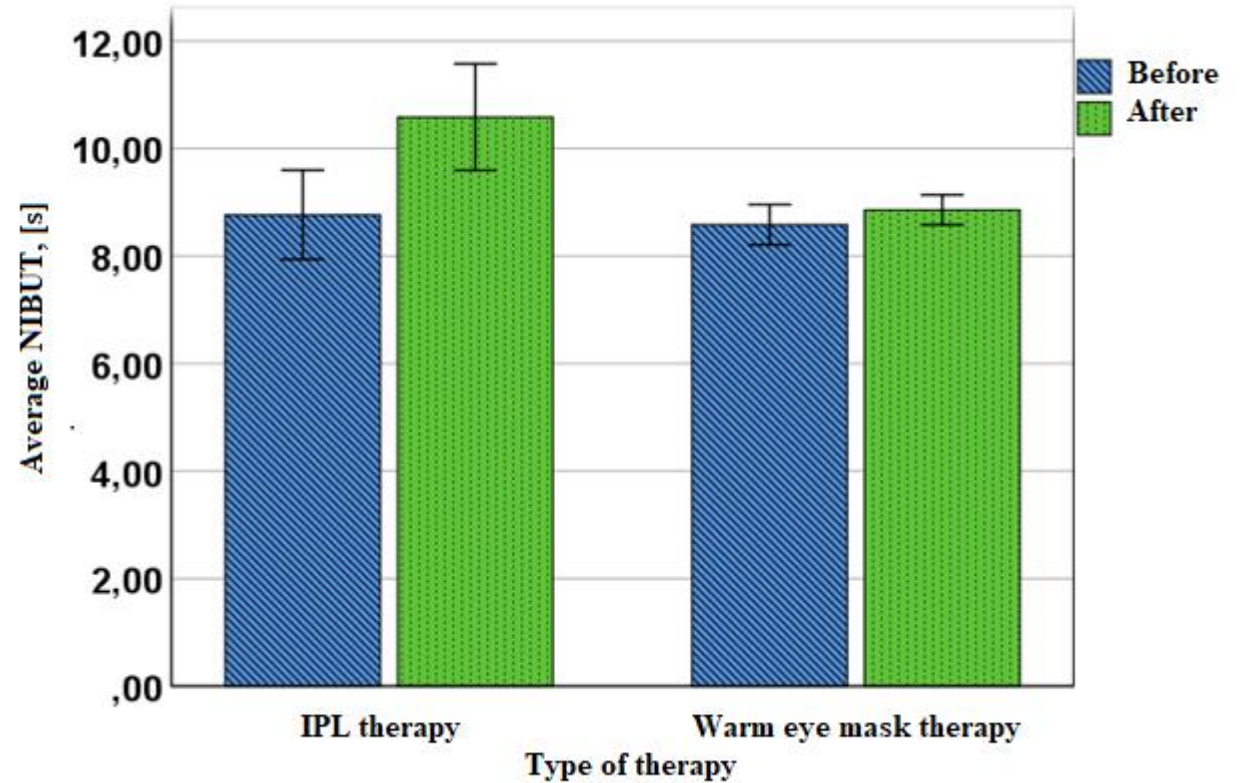
# Research Results



		Average changes	p – value (Mann Whitney U test)
Lipid layer thickness, [nm]	IPL therapy	14,5 ± 5,7 nm	p = 0,81
	Warm eye mask therapy	13,0 ± 2,5 nm	
Meibomian gland deficiency, [%]	IPL therapy	10,1 ± 4,2 %	p = 0,25
	Warm eye mask therapy	16,8 ± 2,7 %	
OSDI coefficient	IPL therapy	16,0 ± 2,5	p = 0,08
	Warm eye mask therapy	9,0 ± 1,1	

# Conclusion

- Two IPL procedure improve NIBUT, lipid layer thickness, Meibomian gland deficiency, corneal staining and OSDI.
- Warm mask therapy improve lipid layer thickness, Meibomian gland deficiency, corneal staining, OSDI.
- Both therapies can be used in dry eye disease treatment.



	Average NIBUT changes	p – value (Wilcoxon test)	p – value (Mann Whitney U test)
IPL therapy	1,8 ± 0,7 s	p = 0,02	p = 0,17
Warm eye mask therapy	0,3 ± 0,4 s	p = 0,43	