

Hairdressers' shoulder load when blow-drying - studying the effect of a new blow dryer design on upper arm inclination

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by Senior Physician Morten Wærsted,
National Institute of Occupational Health, Oslo, Norway

Agenda

- Our earlier studies on hairdressers
- Background for the present study
- Study outline
- What did we find?
- Summarizing the experiences from this study
- General recommendations

Our earlier studies involving hairdressers

- A small pilot study with an intervention on work technique
Veiersted et al. 2008, Applied Ergonomics 39(2),183-190
- A cohort study following student hairdressers for 6.5 years from school through apprenticeship and into working life
- Student hairdressers (girls) and student electricians (boys) compared with media/communication students (both sexes)
- Several publications – most relevant for our topic to-day:
Hanvold et al. 2015, Applied Ergonomics 47(1),43-51
Hanvold et al. 2014, Scand J Work Environment Health 40(6),597-609
Hanvold et al. 2013, Scand J Work Environment Health 39(4),390-400
Hanvold et al. 2010, J Adolescent Health 46(5),488-494

Background for the blow dryer project

- An experienced Norwegian hairdresser invented a blow dryer with a completely new design based on ergonomic principles
- She contacted STAMI and we agreed to do this project
- To our knowledge this is the first attempt to dramatically improve the design of a professional handheld blow dryer
- After years of practical and technical problems, the production (and the recordings in this project) started in October 2015
- STAMI has full scientific freedom with regard to study design, choice of measurements, and publication of results

The idea of the project

- Compare hairdressers' upper arm elevation with new and traditional blow dryers
- Objective recording of arm angle and of shoulder muscle activity
- All participating hairdressers were recorded using the new blow dryer and their own traditional blow dryer
- Measured for full work days in their hair salons
- Also measured during blow-drying of mannequin heads in the laboratory (using Parlux 1300 for comparison)

The new blow dryer (www.dualair.no)



- Airflow changes between two air outlets
- To be held with a loose grip and resting in the hand
- Touch buttons operated by fingers

Study outline

	Rec 1	Period in between	Rec 2	Period in between	Rec 3	Period in between	Rec 4
Blow dryer in laboratory	 		 		 		 
Blow dryer in hair salon:							
Group 1							
Group 2							

Rec 1 – 4 = Days with recording in laboratory and in hair salon (Rec 4 only laboratory)

Period in between = 2 – 3 months between recording days

 = Blow dryer with traditional design

 = Blow dryer with new design

Measurements

- Position (angle) of neck and both upper arms
- Muscle activity from both upper trapezius muscles
- The recording day started in the laboratory and then a full workday in the hair salon
- A research assistant noted all activities in the hair salon, including use of right or left hand during blow-drying
- During the whole study period the participants gave daily reports on pain and on hairdressing activities
- The participants' subjective evaluation of the blow dryer

Results

- Upper arm elevation above 60° was reduced with the new blow dryer
- Trapezius muscle activity was reduced in the laboratory, but not in the hair salon
- Neck and shoulder pain reports were not influenced
- 13 of the 19 participants preferred their traditional blow dryer
- The hairdressers probably received too little training and instruction in optimal use of the new blow dryer

Summarizing the experiences from the project

- The new blow dryer design gives less time with pronounced upper arm elevation (above 60°)
- Difficult for the experienced hairdressers to change work technique – more training/instruction probably needed
- Possibly increased load on the wrist (at least with “wrong” blow-drying technique)?
- Possibly a good idea to introduce student hairdressers for the new blow dryer design?
- Hairdressers will have different preferences for blow dryer type
- Preference may depend on work task – both types available?

General recommendations

- Risk factors for work-related musculoskeletal complaints are both organizational, psychological, and biomechanical – important to address all in prevention efforts
- Equipment and furniture should have a good design from an ergonomic viewpoint
- Allow, if possible, individual adjustments and choices
 - Equipment that a majority prefer, may be a bad choice for some
 - Equipment that is ideal for some, may not be suitable for all hairdressers
 - Equipment that reduces or eliminates complaints, do not necessary prevent musculoskeletal complaints from arising (primary vs secondary prevention)
- Put sufficient effort into education and training in good work techniques