

MENTAL HEALTH EXAMINATION METHODS APPLIED FOR MEDICAL CERTIFICATES FOR PILOTS IN RUSSIA. WAYS TO IMPROVE?



Dr. Olga Verba – Vice President of
AMDA

ESAM Advisory Board
Co-opted Member

Disclosure

- There is no conflict of interest
- The review contains the selection of the material open to public use in the Russian Federation



Content

- Regulations
- Structure of psychological provision/specialists
- Conditions and requirements of psychological status for licensing
- Obligatory and additional
- Ways to improve?



Regulatory documents

ICAO

“Manual on psychological provision of recruitment, training and professional activities of CA personnel”

«Medical assessment of flight crew members, air traffic controllers, flight attendants, student pilots and candidates entering educational institutions of CA”

The Air Code of the Russian Federation

The Rules for the Investigation of Accidents and Incidents with Civil Aircrafts in the RF

“Certification of Legal Entities Performing Medical Examination of Aviation Personnel”

“Methodological recommendations on qualification requirements for medical experts and psychologists of medical flight expert commissions of civil aviation”

Regulation and provision

- The quality of assessment is ensured and controlled by the Air Transport Certification System of Russia (ATCSR)
- The assessment procedure is conducted by FEMC of Civil Aviation (CFEMC CA), designated by the Licensing Authority (ATCSR)
- FEMC CA consists of the following members: the chair of the commission, experts (physician, neurologist, surgeon, otolaryngologist, ophthalmologist) and psychologist



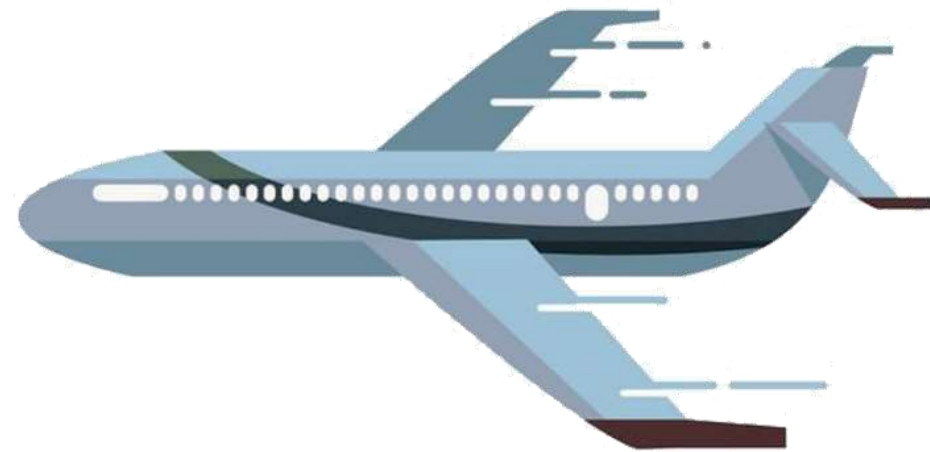
The system of psychological provision in Civil Aviation includes:

- Obligatory psychological assessment of applicants
- Medical assessment of mental health of airmen
- Psychological training of aviation staff
- Analysis of psychological factors in frames of accident and incident investigation
- Psychological provision of recruitment at airlines
- Psycho prophylaxis, psycho correction, psycho therapy
- Supportive psychological measures and development of professionally significant features



The system involves the following specialists in aviation psychology:

- a psychologist of FEMC
- a psychologist of an airline
- a psychologist of a civil aviation educational institution



Obligatory psychological examination

- among candidates entering educational institutions

(to be trained as pilots, navigators, engineers, ATCOs) as well as to student pilots if a break from studies is longer than 4 months

- among airmen after 50 years old

- among airmen if case of a break from work longer than 4 months, as well as after being retrained

- when being promoted for a position

(a pilot-in-command, pilot instructor, ATCO instructor, senior ATCO, flight director)

- when being assigned to take part in Polar expeditions and countries with hot climate

- when taking an in-patient examination

- under referral



Medical grounds for referral for Psychological Assessment :

- suspected epilepsy
- residual signs of central nervous system diseases
- various degrees of sustained traumatic brain injury
- signs of atherosclerosis and hypertension
- short-term somatogenous psychiatric disorders
- psychopathy, personality and behavioral disorders, neurosis
- suspected alcohol and psychoactive substances abuse
- reinstatement to work after treatment for alcohol addiction
 - Additional medical examinations, including psychological one take place after illness or trauma, long-term vacations, incidents or accidents, and temporal grounding at pre-flight medical check-ups
 - All pilots take obligatory additional psychiatric examination (complimentary to FEMC) at specialized psychiatric institutions when being initially employed and once in 5-year period



Psychological requirements necessary to exercise the privileges of a pilot license

Perception of Information



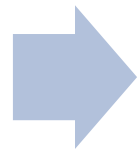
Attention

(volume, switching focus, selectivity)



Pilots are not supposed to have any disorders and conditions disturbing information perception necessary to fulfil occupational tasks

Operational Actions



Sensory motor coordination (speed and accuracy of sensory motor reactions, proper tracking reaction)



Pilots must not have any disorders and conditions disturbing the motor actions, speech commands regarding occupational activities

Mental functions



Memory (working, short-term and long-term)
Intellection (ability to manipulate with images, to analyze situational environment, to integrate information, to be good at spatial orientation, to do arithmetic calculations etc.)



Pilots must not have any mental diseases, personality and behavioral disorders, low brain functions under the border-line which may threaten occupational performance safety

Functional capabilities



Alertness, high tolerance and switching capabilities



License holders are not supposed to work under low functional capabilities which might lead to low tolerance of occupational environment



GOALS OF PSYCHOLOGICAL EXAMINATION

Identification of necessary cognitive and higher mental functions

Detection and evaluation of mental disorders and border-line mental conditions

Detection and analysis of psycho emotional stress among the persons with psycho somatic causes of disorders

Additional diagnostic information:

- suspicion of brain disorders
- estimating consequences.
- suspicion of chronical intoxication (including alcohol)

Established procedure

conversation

observation

personal
profile data
analysis

psychological
tests

conclusion

Two main types (standard approved methods)

- Assessment of cognitive skills and higher mental functions
- Assessment of personal psychological traits

Battery tests

-Printed forms
-Automated versions
(e.g Cogscreen)

-Group
-Individual

-Obligatory
-Additional



Standard approved methods

ASSESSMENT OF HIGHER MENTAL FUNCTIONS AND COGNITIVE SKILLS

BATTERY TESTS

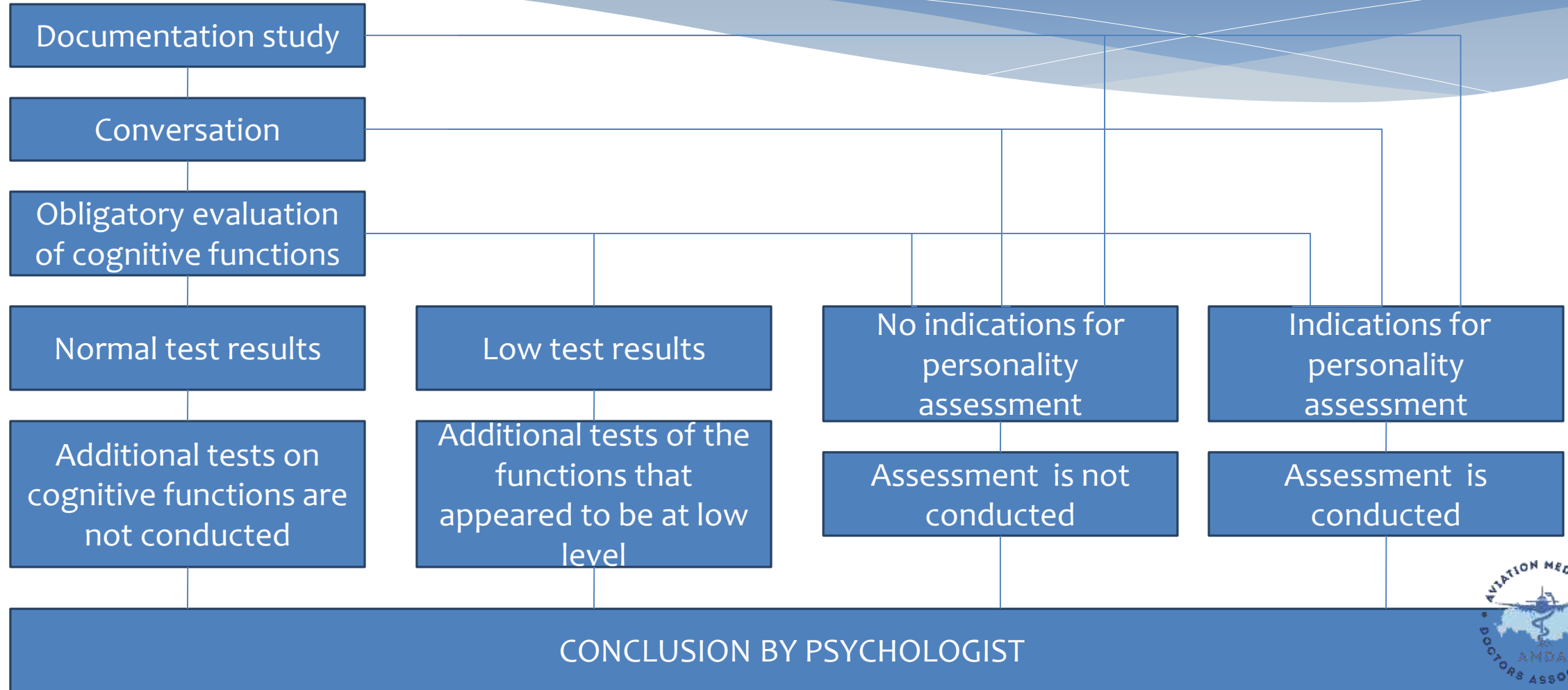
TEST AND ITS INDEX	MAIN PSYCHOLOGICAL FUNCTIONS	ADDITIONAL TESTS
Black-red table - time of fulfilment (sec.)	Switching capability and attention distribution	Calculations (arithmetic's), Analogies (Logical thinking), Intellectual lability (abilities to acquire new skills), Stroop test (interference in reaction)
Scales (15 tasks) - number of right answers	Working and short-term memory, arithmetic calculations	
Compass - number of right answers	Spatial orientation, manipulation with images	
Landoldt's circles (double) - number of circles watched with the deduction of mistakes	Memory capacity and attention sustainability	
Raven's test - number of right answeres	Logical and analytical skills	
Low/under medium/medium – demand interpretation Above medium/ high score – no interpretation demanded	*when interpreting the results, functions below medium level are to be specified (memory, intellection, attention, sensory motor coordination etc.)	



Assessment of personal psychological traits

MAIN AND MANDATORY TESTS			ADDITIONAL
Method and score			
Standardized method of personality assessment (MMPI adapted by Sobchik L.N)	Neuro-mental stability <ul style="list-style-type: none"> • Complex of normal • Harmonic personality • Compensation abilities • Successful adaptation • Proper self control of emotions 	Neuro-mental instability <ul style="list-style-type: none"> • Proneness to frequent nervous breakdowns under complicated, stressful circumstances • Emergence of border-line signs of neuro-mental disorders 	Color selection test (Lusher test, adapted by Sobchik L.N.), Method of portrait choices etc.
If the result exceeds 80 points at one or several clinical scales (with valid index of control scales) there are solids grounds to refer to the psychiatrist			A psychologist can apply additional methods at their own discretion

OVERVIEW OF PSYCHOLOGICAL ASSESSMENT PROCEDURE



Conclusion and the results demanding further analysis (grounds for neuro psychological diagnostics)

Neurological disorders	Typical signs
Alcohol and drug abuse	short-term memory failures within capacity of other mental functions
Developing Alzheimer disorder (frequent among persons over 50 y.o)	visible violations of long-term memory, including professional knowledge and skills, decreased capability to identifying objects and people, failures in spatial orientation
Brain lesions after trauma, cerebral disorders	decreased functions of perception, intellection, arithmetic's, motor skills, speaking
Brain cancer	inadequate answers, gross mistakes
Traumatic encephalopathy	reduced speed of answering and performance indicators.
Diffuse brain lesion caused by cerebral atherosclerosis	deviations of attention focus: decreased attention volume, low switching capabilities, attention selectivity, uncontrolled attention breakdown and disability to continue completing a test



* Among aged pilots (over 50) practically all pilots experience gradual decline in mental functions: general cognitive capabilities, difficulties in solving non-standard tasks, problems with mastering new movement skills, decreased critical thinking. There are benchmark scores for age groups

New Paradigm of Psychological Provision

Directions of psychological provision

Corporate Culture Development	Psycho diagnostic Assessment	Training	Follow-up Support	Analytical Activities
Developing the sense of commitment, positive thinking, team spirit; increasing the level of self-awareness	Evaluation on compliance of psychological features of aviation personnel with the operational requirements. Building-up professional forecasts	Psychological training. Development of professionally significant personal features through psychological methods	Psychological support of personnel activities, their mental health and high performance. Conflict Management	Psychological evaluation of mistakes, disruption, causes of accidents and incidents in aviation. Analysis of moral and psychological state



COMMISSION REGULATION (EU) 2018/1042 of 23 July 2018

- **recommendations to mitigate safety risks**
- **pro-active measures**

- 1) psychological assessment of the flight crew before commencing line flying in order to
 - identify psychological attributes and suitability of the flight crew of the work environment
 - reduce the likelihood of negative interference with the safe operation of the aircraft
- 2) implementation of a support programme
- 3) carrying-out of random alcohol testing on flight and cabin crew members by Member States
- 4) systematic testing of psychoactive substances of flight and cabin crew members by commercial air transport operators

Ways to improve: New Proposal

**Research department
the Tsiolkovsky Technology
University**

- “Aircraft maneuvers”
pre-flight medical check-ups

**Identification of brain functions
decrease under depression or
alcohol intoxication**

- at pre-flight medical check-up
- computerized
- 3-4 minutes
- no need for a psychologist to attend

An airline operator psychologist responsible for

- providing psychotherapeutic, rehabilitation measures and checking examinations if necessary
- organizing psychotherapeutic assistance to the personnel who have experienced psychological stress at work or during off-duty circumstances
- keeping records of primary data and conclusions of psychological testing as well as providing those data for generalizations and scientific research
- interacting with the psychologist or the chairperson of the FEMC on provision of additional information to be used for proper diagnostic and relevant assessment of license holders
- collaborating with the airline administration on psychological selection when hiring new employees as well as in nominating employees for retraining, appointment to superior and instructor positions
- providing recommendations for administration on improvement of a psychological environment, selection and preparation of psychologically compatible crews (shifts)
- identifying fatigue risks among the crews on flights (charter flights), recommending additional measures on flight safety
- participating in investigation commissions
- providing psychological training for aviation personnel



Ways to improve: Proposal for the Russian Federation

- Peer Support Programme
- Collaboration with European specialists and sharing ideas and experience

Ways to improve



The First Congress AMDA

«Current issues of Aviation Medicine»

Title: The First Congress AMDA
«Current issues of Aviation Medicine»

When: 17-19 October, 2018

City: Moscow

Organizer: Aviation Medicine Doctors Association

Supported by: Ministry of Transport, Federal Air
Transport Agency of the Russian Federation

In collaboration with: European Society of Aerospace
Medicine ESAM

Technical organizer: LLC «Medicine Today»

Website: www.avam-avia.ru





Aviation Medicine
Doctors Association

First International Congress

**CURRENT ISSUES
OF AVIATION MEDICINE**

Moscow 2018

www.avam-avia.ru



AVIATION MEDICINE DOCTORS ASSOCIATION



First International Congress on

**CURRENT ISSUES OF
AVIATION MEDICINE**

Moscow 2018

avam-avia.ru

Thank you for your attention!



125367, Moscow, Russia, 7 Ivankovskoe shosse,
Tel.: +7 495 490 0391
www.avam-avia.ru