

THE REGULATIONS

The regulations of the IYPT are yearly updated by the IOC (International Organising Committee). Usually only minor modifications are made, e.g. correcting formulation-errors.

The following version of the regulations was established in Stuttgart in October 1997. This version was (with minor changes) in force for the 12th IYPT in Vienna and the 13th IYPT in Budapest.

The Regulations of the International Young Physicists' Tournament

I . The International Young Physicists' Tournament (IYPT)

is a competition among teams of secondary school students in their ability to solve complicated scientific problems, to present solutions to these problems in a convincing form and to defend them in scientific discussions, so called Physics Fights (PF).

II . The problems of the IYPT

The problems are formulated by the International Organizing Committee (IOC) and sent to the participating countries not later than in October. These problems may be used in regional and national tournaments. To compose the problems a meeting of the IOC may be held in the host country.

III . The participants of the IYPT

1. The national teams

Any invited country is represented by one team. The host country may be represented by two teams.

2. The teams of regions, towns, colleges etc.

The decision about the participation of such a team is taken by the Local Organizing Committee (LOC).

3. The membership of the teams

The IYPT team is composed of five high school students. The high school graduates may participate in the IYPT in the year of their graduation. The participation of university students is not allowed. The International Organizing Committee may allow participation of teams of four or three students. The composition of the team cannot be changed during the Tournament. The team is headed by a captain who is the official representative of the team during the PF.

4. The team is accompanied by two team leaders.

IV . The Jury

The Jury is nominated and organized by the LOC. It consists of members of different countries. Team leaders (one from each team) are included in the Jury. The team leaders cannot be members of the Jury in the PF where their teams participate.

V. The agenda of the IYPT

The IYPT is carried out in a period determined by the LOC (from May till July) during seven to nine days. The teams participate in scientific discussions, so called Physics Fights (PF):

- 3 Selective PFs
- Semifinal PF
- Final PF.

The host country provides a cultural program for the participants.

VI . The Physics Fight regulations

Three or four teams participate in a PF (depending on the total number of teams). In the course of a PF the members of a team communicate only with each other. Before the beginning of a PF, the Jury and the teams are introduced. The PF is carried out in three (or four) Stages. In each Stage, a team plays one of the three (four) roles: Reporter, Opponent, Reviewer (Observer). In the following Stages of the PF, the teams change their roles according to the scheme:

<i>Three teams PF</i>				
Team	Stage	1	2	3
1		Rep	Rev	Opp
2		Opp	Rep	Rev
3		Rev	Opp	Rep

<i>Four teams PF</i>					
Team	Stage	1	2	3	4
1		Rep	Obs	Rev	Opp
2		Opp	Rep	Obs	Rev
3		Rev	Opp	Rep	Obs
4		Obs	Rev	Opp	Rep

VII . The Stage regulations

The performance order in the Stage of a Selective or Semifinal PF:

	English	English/ Russian
The Opponent challenges the Reporter for the problem	1 min	1 min
The Reporter accepts or rejects the challenge	1 min	1 min
Preparation of the Reporter	5 min	5 min
Presentation of the report	12 min	12 min
Questions of the Opponent to the Reporter and answers of the Reporter	2 min	3 min
Preparation of the Opponent	3 min	3 min
The Opponent takes the floor	5 min	8 min
Discussion between the Reporter and the Opponent	5 min	8 min
Questions of the Reviewer to the Reporter and the Opponent and answers to the questions	2 min	3 min
Preparation of the Reviewer	2 min	2 min
The Reviewer takes the floor	3 min	5 min
Concluding remarks of the Reporter	2 min	3 min
Questions of the Jury and grading	2 min	2 min

In the Final PF the procedure of challenge is omitted.

The official language of the IYPT is English. The report has to be presented in English. In the subsequent parts teams can choose to use Russian.

VIII . The teams performance in the Stages

The Reporter presents the essence of the solution to the problem, attracting the attention of the audience to the main physical ideas and conclusions. Standard devices for presentation are blackboard, transparencies- and slide projector. For further devices the teams must use their own equipment.

The Opponent puts questions to the Reporter and criticizes the report, pointing to possible in-accuracy and errors in the understanding of the problem and in the solution. The Opponent analyzes the advantages and drawbacks of both the solution and the presentation of the Reporter. The discussion of the Opponent should not become a presentation of his/her own solution. In the discussion, the solution presented by the Reporter is discussed.

The Reviewer presents a short estimation of the presentations of the Reporter and the Opponent.

Limitation of the number of presentations:

During one PF no member of a team may take the floor more than twice (other members of the team are allowed to make brief remarks).

IX . The rules of problem-challenge and rejection

1. All problems presented in the same PF must be different.

2. *Selective PF*

The Opponent may challenge the Reporter on any problem with the exception for a problem that:

- (a) was presented by the Reporter earlier;
- (b) was opposed by the Opponent earlier;
- (c) was presented by the Opponent earlier.

If such a challenge cannot be made, the bans (c), (b), (a) are successively removed in the given order. During all Selective PFs the Reporter may reject the challenge three times in total without penalty. For every subsequent rejection the coefficient of the Reporter (see section X) is decreased by 0.2.

All the problems rejected by the Reporter are included in a Rejection List of the team. The rejection of these problems in successive PFs does not involve penalty.

3. *Semifinal PF*

In the Semifinal PF 10 problems are used, which are determined by the LOC according to a Rating List prepared by the participants (each team ascribes integer numbers to problems; the sum of these numbers should be equal to 100).

The Opponent may challenge the Reporter for any of the 10 problems. During the Semi-final PF the Reporter may reject the challenge twice without penalty. For any subsequent rejection the coefficient of the Reporter decreases by 0.2.

4. *Final PF*

Within 2 hours after the announcement of the results in the Semifinal the teams participating in the Final choose their problems. In case teams choose the same problem, priority is given according to the ranking in the Semifinal.

X. The grading

After each Stage the Jury rates the teams, taking into account all presentations of the members of the team, questions and answers to the questions, and participation in the discussion. The marks are transformed into grades and then into points with various coefficients for the Reporter, Opponent and Reviewer according to the scheme:

Mark	5+	5	5-	4+	4	4-	3+	3	3-
Grade	53	50	47	43	40	37	33	30	27

	Reporter	Opponent	Reviewer
Coefficient	3.0 or less	2.0 or 2.2	1.0

The coefficient of the Opponent challenging for the problem “Invent for Yourself” is 2:2, since he takes the risk to face an unknown problem. The coefficient of the Opponent challenging for other problems is 2:0.

If the Jury consists of 5 or 6 persons, the lowest grade is withdrawn in the evaluation of the mean grade. If the Jury consists of more than 6 persons the highest and the lowest grades are withdrawn.

XI . The resulting parameters

1. For a team in the PF

SP (the sum of points) is the sum of mean grades multiplied by the corresponding coefficients and rounded to 1. SP_j is the sum of points of the team taking place j in a given PF.

R (the rating) characterizes the success of a team in the PF. R_j is the parameter of the team taking place j . R_j depends upon j , SP_j and the value of $SP_i - SP_j$ ($i = j$). The rating of the team taking place j is determined according to the following table:

	Team's place in the Fight				
	1	2, 3 or 4	2	3 or 4	3 or 4
		$SP_j \geq SP_1 - 6$	$SP_2 < SP_1 - 6$	$SP_j \geq SP_2 - 6$	$SP_j < SP_2 - 6$
$SP_j \geq 290$	5	5	4	4	3
$290 > SP_j \geq 240$	4	4	3	3	2
$240 > SP_j \geq 190$	3	3	2	2	1
$190 > SP_j$	2	2	1	1	0

This rule of evaluation of R holds for all PFs.

2. For a team in the Tournament

TSP (the total sum of points) equals the sum of SP of the team in all PFs, TR (the total rating) is the sum of ratings of the team in all PFs.

3. For members of a team

The appearance of a team member as Reporter, Opponent or Reviewer is considered successful if all the grades taken into account are higher than 3+. In the successful appearances the member of a team gathers points:

IR (the individual rating) equals the sum of points gathered by a team member in all successful appearances, divided by the number of the grades taken into account.

Grade	5+	5	5-
Points	3	2	1

XII . Selective PFs

In the course of the Selective PFs any one team meets with another team only once, according to the following scheme (numbers ascribed to teams in the scheme are determined by lot):

1 st Selective Fight											
Group	18-20 team Fight						15-17 team Fight				
	I	II	III	IV	V	VI	I	II	III	IV	V
Reporter	1	2	3	4	5	6	1	2	3	4	5
Opponent	7	8	9	10	11	12	6	7	8	9	10
Reviewer	13	14	15	16	17	18	11	12	13	14	15
Observer	19	20					16	17			

2 nd Selective Fight											
Group	18-20 team Fight						15-17 team Fight				
	I	II	III	IV	V	VI	I	II	III	IV	V
Reporter	11	12	7	8	19	20	17	10	6	7	16
Opponent	16	17	18	13	9	10	9	14	15	11	8
Reviewer	6	1	2	3	14	15	13	1	2	3	12
Observer					4	5	5				4

3 rd Selective Fight											
Group	18-20 team Fight						15-17 team Fight				
	I	II	III	IV	V	VI	I	II	III	IV	V
Reporter	18	13	14	15	16	17	15	11	12	13	14
Opponent	5	6	1	19	20	4	4	5	1	16	17
Reviewer	9	10	11	2	3	8	7	8	9	2	3
Observer				12	7					10	6

The distribution of the team leaders among the groups, which is determined below, assures that they do not judge their own team. The scheme for the Selective PFs with more than 20 or less than 15 teams, should be composed using the same principles.

Group	18–20 team Fight						15–17 team Fight				
	I	II	III	IV	V	VI	I	II	III	IV	V
Team	2	3	4	5	6	1	2	3	4	5	1
leaders	8	9	10	11	12	7	8	9	10	6	7
	14	15	16	17	18	13	12	13	14	15	11
	20					19			16	17	

XIII . The Semifinal

The nine teams having the highest *TR* in the Selective PFs participate in the Semifinal. The team taking place 10 to 12 may participate in the Semifinal if its *TR* equals that of the team taking place 9 and its *TSP* differs by no more than 6 from that of the team taking place 9. Teams and team leaders are distributed among three groups according to the tables below. They are enumerated according to their *TR* (if equal to their *TSP*): the higher *TR* (*TSP*), the lower the number.

Group	I	II	III
Reporter	1	2	3
Opponent	6	5	4
Reviewer	7	8	9
Observer	(12)	(11)	(10)

Group	I	II	III
	2	3	1
Team	5	4	6
leader	8	9	7
	(11)	(10)	(12)

There can be only one winner of the Semifinal in each group. The winner is determined by, in order, the highest *R*, the highest *TR*, and the highest *TSP*; in case of equality by lot.

XIV . The Final

The winners of the Semifinal participate in the Final. If the team which got the highest *TR* is not among these teams, it participates in the Final as a fourth team. If there is more than one such team, the decision is taken according to the highest *TSP*; in case of equality by lot. The order of presentation in the Final is determined by the *TR*, in case of equality by the *TSP*, in case of equality by lot: the higher *TR* (*TSP*), the lower the number in the schemes of section VI.

XV. The winners of the IYPT

1. Team competition

The participants of the Final assure for themselves place II and compete for place I. The participants of the Semifinal assure for themselves place III. The following places in the Tournament are determined by the value of *TR*.

2. Individual competition

The Absolute winner of the Tournament is determined by the value of *IR*. The highest *IR*, denoted as *HIR*, serves as a reference. All participants (team members) that have an *IR* score higher than $0.8HIR$ are “winners” and those having *IR* higher than $0.5HIR$ receive an honourable mention (for successful participation).

XVI . The Regulations of the International YPT

are established by the IOC and may be changed only by the IOC.

Stuttgart, October 1997¹

¹ taken from a hand-out, which we were given during the 12th IYPT

In October 2000 the IOC made major modifications of the regulations to simplify the process of grading and to make the tournament more interesting by changing the sequence of physics fights.

The following rules will be in force for the 14th International Young Physicists' Tournament which will be held in May 2001 in Espoo (Finland).

The Regulations of the International Young Physicists' Tournament

I. International Young Physicists' Tournament

The International Young Physicists' Tournament (IYPT) is a competition among teams of secondary school students in their ability to solve complicated scientific problems, to present solutions to these problems in a convincing form and to defend them in scientific discussions, called Physics Fights (PF).

II. The problems of the IYPT

The problems are formulated by the International Organizing Committee (IOC) and sent to the participating countries not later than in October. These problems may be used in regional and national tournaments. To compose the problems a meeting of the IOC may be held in the host country.

III. The participants of the IYPT

1. The national teams

Any invited country is represented by one team. The host country may be represented by two teams.

2. The teams of regions, towns, colleges etc.

The decision about the participation of such a team is taken by the Local Organizing Committee (LOC).

3. The membership of the teams

The IYPT team is composed of five secondary school students. The secondary school graduates could participate in the IYPT in the year of their graduation. The participation of university students is not allowed. The IOC may allow participation of teams of four or three students. The composition of the team cannot be changed during the Tournament. The team is headed by a captain who is the official representative of the team during the PF.

4. The team is accompanied by two team leaders.

IV. The Jury

The Jury is nominated and organized by the LOC. It consists of members of different countries. Team leaders (one from each team) are included in the Jury. The team leaders cannot be members of the Jury in the PF where their teams participate and should not, if possible, grade any one team more than twice.

V. The agenda of the IYPT

The IYPT is carried out in a period determined by the LOC (from May to July).

All teams participate in five Selective PFs. Selective PFs are carried out according to a special schedule, following the rule that, if possible, no team meets another team more than once. This schedule should be known before numbers are ascribed to the teams by lot. The best teams participate in the Final PF.

The host country provides a cultural program for the participants.

VI. The Physics Fight regulations

Three or four teams participate in a PF, depending on the total number of teams. In the course of a PF the members of a team communicate only with each other.

Before the beginning of a PF, the Jury and the teams are introduced.

The PF is carried out in three (or four) Stages. In each Stage, a team plays one of the three (four) roles: Reporter, Opponent, Reviewer (Observer). In the following Stages of the PF, the teams change their roles according to the scheme:

Three teams PF

Team	Stage 1	2	3
1	Rep	Rev	Opp
2	Opp	Rep	Rev
3	Rev	Opp	Rep

Four teams PF

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1	Rep	Obs	Rev	Opp
2	Opp	Rep	Obs	Rev
3	Rev	Opp	Rep	Obs
4	Obs	Rev	Opp	Rep

VII. The Stage regulations

The performance order in the Stage of a PF:

	Reserved time in minutes	
	English	English/ Russian
The Opponent challenges the Reporter for the problem	1 min	1 min
The Reporter accepts or rejects the challenge	1 min	1 min
Preparation of the Reporter	5 min	5 min
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Questions of the Opponent to the Reporter and answers of the Reporter	2 min	3 min
Preparation of the Opponent	3 min	3 min
The Opponent takes the floor	5 min	8 min
Discussion between the Reporter and the Opponent	5 min	8 min
Questions of the Reviewer to the Reporter and the Opponent and answers to the questions	2 min	3 min
Preparation of the Reviewer	2 min	2 min
The Reviewer takes the floor	3 min	5 min
Concluding remarks of the Reporter	2 min	3 min
Questions of the Jury and grading	2 min	2 min

In the Final PF the procedure of challenge is omitted.

The official language of the IYPT is English. The report has to be presented in English. In the subsequent parts teams can choose to use Russian.

VIII. The team performance in the Stages

The Reporter presents the essence of the solution to the problem, attracting the attention of the audience to the main physical ideas and conclusions. Standard devices for presentation are blackboard, overhead and slide projectors. For further devices the teams should consult the organizers.

The Opponent puts questions to the Reporter and criticizes the report, pointing to possible in-accuracy and errors in the understanding of the problem and in the solution. The Opponent analyses the advantages and drawbacks of both the solution and the presentation of the Reporter. The discussion of the Opponent should not become a presentation of his/her own solution. In the discussion, the solution presented by the Reporter is discussed.

The Reviewer presents a short estimation of the presentations of Reporter and Opponent.

During one PF only one member of a team takes the floor as Reporter, Opponent or Reviewer; other members of the team are allowed to make brief remarks. No member of a team may take the floor more than twice during one PF or, as Reporter, more than three times in total during all Selective PFs.

IX. The rules of problem-challenge and rejection

1. All problems presented in the same PF must be different.

2. *Selective PF*

The Opponent may challenge the Reporter on any problem with the exception for a problem that:

- a) was presented by the Reporter earlier;
- b) was opposed by the Opponent earlier;
- c) was presented by the Opponent earlier.

If there are less than five problems left to challenge, the bans c), b), a) are successively removed, in that order.

During the Selective PFs the Reporter may reject the challenge of three different problems in total without penalty. For every subsequent rejection the coefficient of the Reporter (see section X) is decreased by 0.2.

3. *Final PF*

Within four hours after the announcement of the results of the Selective PFs the teams participating in the Final choose their problems. In case teams choose the same problem, priority is given according to the order of presentation in the Final (see section XII). The choice should be made public immediately.

X. The grading

After each Stage the Jury grades the teams, taking into account all presentations of the members of the team, questions and answers to the questions, and participation in the discussion. Each Jury member shows marks from 1 to 10. If the Jury consists of more than six persons the highest and the lowest marks are withdrawn. If the Jury consists of five or six persons, the lowest mark is withdrawn in the evaluation of the mean mark. The remaining marks are taken into account in all further calculations. The mean marks are multiplied by various coefficients: 3.0 or less (see section IX) for the Reporter, 2.0 for the Opponent, 1.0 for the Reviewer and then transformed into points.

XI. The resulting parameters

1. *For a team in the PF*

The sum of points (*SP*) is the sum of mean marks, multiplied by the corresponding coefficients and rounded to one decimal.

2. For a team in the Tournament

The total sum of points (*TSP*) equals the sum of *SP* of the team in all Selective PFs. The highest *TSP*, denoted as *HTSP*, serves as reference (see section XIII).

XII. The Final

The three teams having the highest *TSP* in the Selective PFs participate in the Final. In case teams have equal *TSP*, their participation in the Final is decided by the most balanced teamwork during the Selective PFs, in case of equality by lot.

XIII. The final team ranking of the IYPT

The winner of the Final obtains the 1st place. The other two teams participating in the Final share the 2nd place. For teams not participating in the Final, the LOC decides, according to the *TSP* obtained, which teams will share the 3rd place.

XIV. The status of the regulations of the IYPT

The regulations are established by the IOC and may be changed only by the IOC.

Espoo, October 14th 2000²

² <http://www.tapiolanlukio.fi/iypt2001/iypt-reg.rtf>

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